Title **Finite Element Method**	Code **10102513610102102426**
Field **Mechatronics**	Year / Semester **3 / 6**
Specialty **-**	Course **core**
Hours Lectures: **-** Classes: **1** Laboratory: **1** Projects / seminars: **-**	Number of credits **2**
	Language **polish**

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Status of the course in the study program:
- Basic course of the study program.

Assumptions and objectives of the course:
- Getting acquainted with basing knowledge of theoretical fundamentals and methods,
 connected with the application of the finite element method in practise.

Contents of the course (course description):
- Introduction. Truss, as the illustration of the finite element method.
 Stiffness of the truss element in local and global coordinate system.
 Aggregation of the global stiffness matrix and modification of equilibrium equations
 by introducing the boundary conditions. Basic steps of the finite element method
 implementation. Coordinate system tranformation. Approximate solving the sets
 of differential equations. Basic FEM formulation in the mechanics of deformable bodies.
 Isoparametric description of the finite elements. Beam, shell/plate and solid finite
 elements.A computer implementation of the FEM: Model sketch.
 Support conditions. Loadings. Material properties. Modeling with the use of truss, bar,
 plane, shells, solid finite elements. Staic analysis and stability.

Introductory courses and the required pre-knowledge:
- The knowledge of fundamentals in strength of materials, staics and applied mechanics.

Courses form and teaching methods:
- Lectures supported by practical implementation using computer

Form and terms of complete the course - requirements and assessment methods:
- Written evaluation of knowledge.

Basic Bibliography:

Additional Bibliography: