

Title <b>Modern computational methods in mechanics of materials</b>	Code <b>10102122210102102353</b>
Field <b>Mechanical Engineering</b>	Year / Semester <b>1 / 2</b>
Specialty <b>Mechanics of materials and structures</b>	Course <b>core</b>
Hours Lectures: <b>2</b> Classes: -    Laboratory: <b>1</b> Projects / seminars: -	Number of credits <b>3</b>
	Language <b>polish</b>

**Lecturer:**

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**Status of the course in the study program:**

- Core course at the Mechanical Engineering Faculty to second degree studies

**Assumptions and objectives of the course:**

- The student should obtain knowledge from numerical methods with applications for structure analysis

**Contents of the course (course description):**

- Numerical determination of principal stresses and principal directions.  
Interpolations by means of radial basis functions. Boundary element method with application for torsion of prismatic rods and 2-D problems of elasticity.  
Basic meshless methods. Trefftz method and another boundary methods.  
Application of boundary collocation method for determination of deflection of plate.  
Method of fundamental solutions in application for torsion problem of elastic-plastic prismatic rods.

**Introductory courses and the required pre-knowledge:**

- Knowledge of applied mechanics. Basic knowledge of differential calculus and vector algebra.

**Courses form and teaching methods:**

- Lectures and computer laboratory lectures

**Form and terms of complete the course - requirements and assessment methods:**

- Written test from lectures and practical lectures

**Basic Bibliography:**

**Additional Bibliography:**