Title	Code
Strength of Materials (Wytrzymałość materiałów)	**1010401241010210700**
Field: **Technical Physics**	Year / Semester: **2 / 4**
Specialty: **-**	Course: **core**
Hours: Lectures: **2** Classes: **1** Laboratory: **-** Projects / seminars: **-**	Number of credits: **3**
	Language: **polish**

Lecturer:

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Status of the course in the study program:

Core course of the study for Technical Physics, Faculty of Technical Physics.

Assumptions and objectives of the course:

The student should obtain knowledge of theoretical fundamentals and of practical methods used in Strength of Materials analysis.

Contents of the course (course description):

Internal force, stress, strain. Stress-strain diagrams. Mechanical properties of materials. Differential strain-displacement relations. Generalized Hooke?s law. Saint-Venant?s principle. Statically indeterminate systems of bars. Analysis of plane stress and plane strain. Principal stresses. Mohr?s circle for biaxial stress. Stresses in thin-walled pressure vessels. Moments of inertia of plane areas. Torsion of a circular shaft. Statically indeterminate shafts. Torsion of noncircular cross-section shaft. Shaft of rectangular cross-section. Torsion of thin-walled open or closed sections shafts. Stresses in beams. Shear and bending moment diagrams. Differential equation of the elastic line. Deflection of beams. Statically indeterminate beams. Strain energy. Materials under combined stresses. Fundamental failure theories. Combined bending and torsion. Theorem of Castigliano. Frames. Fatigue of materials.

Introductory courses and the required pre-knowledge:

Basic knowledge of mathematics and mechanics are necessary.

Courses form and teaching methods:

Lectures, supported by examples of structure members calculating.

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

Written tests

Basic Bibliography:

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Additional Bibliography:

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