Poznan University of Technology
Faculty of Civil and Environmental Engineering
Stationary Courses

European Credit Transfer System
Course description card

Course title: **Strength of Materials**	Code: ErasmusFCEE-EM
Field of study: **Civil Engineering**	Year / semester: I/2
Specjality:	Course: compulsory
Hours / week: Lectures: 1 Project / Seminars: 1	Number of credits:

Lecturers:
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Institute / Faculty:
Institute of Structural Engineering / Faculty of Civil and Environmental Engineering.

Course description:
Idealization of structural models: 1D (rod, truss, beam, column, frame, arch, grid), 2D (plate, slab, shell), 3D (block). Actions: loads, temperature. First and second moments of area. State of stress and strain in special cases: axial tension, pure bending, bending with shear force, skew bending, eccentric tension, torsion. Equivalent stress. Displacements of beams. Stability of columns. Principles of structure design in ultimate limit state and serviceability limit state. Experimental methods.

Teaching outcomes:
Ability to determine state of stress and strain in statically determinate rod structures, understanding main principles of detailing the structural elements in ultimate and serviceability limit states, understanding the importance of structural stability analysis.

Prerequisites:
Knowledge of mathematics and mechanics according to program of previous courses. In mechanics, among others, knowledge of equilibrium equations, determination of reaction forces and internal forces in trusses, simple beams and statically determinate frames.

Teaching method: lectures, tutorials (traditional presentation) and projects.

Assessment method: evaluation of projects, written test.

Bibliography:

1. A. Gawęcki, Mechanika materiałów i konstrukcji prętowych, Vol. 1 and 2, Wyd. Pol. Pozn. 1998
2. A. Garstecki, M. Dębiński, Wytrzymałość materiałów, Podręcznik internetowy, www.ikb.poznan.pl
3. S. Piechnik, Wytrzymałość materiałów, Politechnika Krakowska, Kraków 1999
4. Z. Cywiński, Mechanika budowli w zadaniach. Układy statycznie wyznaczalne, PWN Warszawa 1999
5. A. Jakubowicz, Z. Orłoś, Wytrzymałość materiałów, Vol. 1 and 2, WNT, Warszawa, 1999 i 1997
6. S. Timoshenko, Strength of Materials, Krieger Pub. Co, 3rd edition, 1983.
7. J. Case, A.H. Chilver, C.T.F. Ross, Strength of Materials and Structures 4 edition, Arnold, 1999, London.(co-published by John Wiley & Sons Inc., New York)