



Subject card

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|---|---|---|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Strength of Materials, PG_00058782 | | | | | | |
| Field of study | Environmental Engineering | | | | | | |
| Date of commencement of studies | October 2023 | Academic year of realisation of subject | | | 2024/2025 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 2 | Language of instruction | | | Polish | | |
| Semester of study | 3 | ECTS credits | | | 4.0 | | |
| Learning profile | general academic profile | Assessment form | | | exam | | |
| Conducting unit | Structural Mechanics Department -> Faculty of Civil and Environmental Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Violetta Konopińska-Zmysłowska | | | | | |
| | Teachers | dr inż. Magdalena Oziębło dr hab. inż. Violetta Konopińska-Zmysłowska mgr inż. Milena Drozdowska | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 30.0 | 0.0 | 0.0 | 0.0 | 45 |
| | E-learning hours included: 0.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | | Self-study | SUM | |
| | Number of study hours | 45 | 7.0 | | 48.0 | 100 | |
| Subject objectives | Student is able to calculate internal forces for simple model of engineering structures and use them to developed stresses in investigated model. Student has knowledge of theoretical basis of dimensioning. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K6_W08] has elementary knowledge of construction: including building materials, their strength, construction mechanics and building physics, moisture migration in buildings, heat transfer through building partitions | Student is able to obtain stress function of beams cross section. Student has basic knowledge of dimensioning of simple structures. | | | [SW1] Assessment of factual knowledge | | |
| | [K6_W02] has knowledge of physics, including mechanics, thermodynamics, optics, electricity and magnetism, nuclear physics and solid state physics, including knowledge necessary to: 1) understand the basic physical phenomena related to material durability, fluid mechanics and hydraulics, building physics, geodetic measurements ; 2) understanding the principles of operation of basic electrical devices and systems; 3) solving project tasks of the sanitary industry; | Student has basic knowledge of simple engineering structures. Student knows basic types of loads of structures and is able to prepare static schemes of basic structures. | | | [SW1] Assessment of factual knowledge | | |
| Subject contents | Strength of materials postulates. Three dimensional stress state. Plane stress state. Axial tension and compression. Inertia moments. Simple bending. Unsymmetrical bending. Eccentric compression and tension. Core of cross section. Bending line of beam Euler method. Bending line of beam Mohr method. Stability. Free torsion. | | | | | | |
| Prerequisites and co-requisites | Rudiments of vector algebra and analysis, differential and integral calculus. | | | | | | |

| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
|--|---|--|-------------------------------|
| | | Written exam | 60.0% |
| Recommended reading | Basic literature | Gere J.M., Timoshenko S.: <i>Mechanics of Materials</i> , PWS-Kent Publishing Company, Boston, 1984 | |
| | Supplementary literature | Willems N., Easley T.J., Rolfe S.T.: <i>Strength of Materials</i> , McGraw-Hill Book Company, 1981 | |
| | eResources addresses | Adresy na platformie eNauczanie: Mechanika Ogólna i Wytrzymałość Materiałów rok 2024 Kierunek Inżynieria Środowiska - Moodle ID: 36383 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36383 | |
| Example issues/ example questions/ tasks being completed | <p>Calculate the shortening of the compressed column.</p> <p>Determine the stresses in the tension rod.</p> <p>Calculate extreme stresses of simple beam.</p> <p>Calculate the bending line of simple beam.</p> | | |
| Work placement | Not applicable | | |

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