GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | Mechanics and Strength of Materials I, PG_00043524 | | |
| Field of study | Environmental Engineering | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | 2021/2022 |
| Education level | first-cycle studies | Subject group | Obligatory subject group in the field of study<br>Subject group related to scientific research in the field of study |
| Mode of study | Full-time studies | Mode of delivery | at the university |
| Year of study | 1 | Language of instruction | Polish |
| Semester of study | 2 | ECTS credits | 3.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Structural Mechanics Department -> Faculty of Civil and Environmental Engineering | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Violetta Konopińska-Zmysłowska | |
| | Teachers | dr inż. Violetta Konopińska-Zmysłowska<br>dr inż. Magdalena Oziębło | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 30.0 | 15.0 | 0.0 | 0.0 | 0.0 | 45 |

E-learning hours included: 0.0

Adresy na platformie eNauczanie:

Mechanika i Wytrzymałość Materiałów rok 2022 Kierunek Inżynieria Środowiska - Moodle ID: 21175
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21175

**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 | 4.0 | 40.0 | 89 |

**Subject objectives**

Student is able to recognize kinds of structures with respect to theoretical model and construct schemes of statically determined systems. Student is able to write equilibrium equations and calculate reaction forces and internal forces.

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [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. Student is able to calculate reaction forces and internal forces for statically determinate beams and frames. | [SW1] Assessment of factual knowledge |
| [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 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. Student is able to calculate reaction forces and internal forces for statically determinate beams and frames. | [SW1] Assessment of factual knowledge |

<table>
<tr><td>Subject contents</td><td colspan="3">Statics principle, basic definitions, equilibrium equations, reactions. Simple beams, hinged beams. Frames, three –hinged frames. Trusses. Strength of materials postulates. Three dimensional stress state.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Rudiments of vector algebra and analysis, differential calculus.</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Midterm colloquiums</td><td>60.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Konopińska-Zmysłowska V., Pestka (Mleczek) A., Oziębło M., Tomaszewska A.: Wybrane problemy mechaniki układów prętowych, zbiór zadań, Wydawnictwo Politechniki Gdańskiej 2016, 2017, 2018.<br><br>McGill D.J.: Engineering Mechanics, PWS Publishers, Boston, 1985</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Seely F.B., Ensign N.E., Jones P.G.: Analytical Mechanics for Engineering, Wiley, New York, 1958</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Mechanika i Wytrzymałość Materiałów rok 2022 Kierunek Inżynieria Środowiska - Moodle ID: 21175<br>https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21175</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Prepare the axial force, shear and moment diagrams for the given statically determinate structure.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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