GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|
| Subject name and code | Thermodynamics II, PG_00040056 | | |
| Field of study | Mechanical Engineering | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | 2022/2023 |
| 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 | Part-time studies | Mode of delivery | blended-learning |
| Year of study | 2 | Language of instruction | Polish |
| Semester of study | 4 | ECTS credits | 3.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Department of Energy and Industrial Apparatus -> Faculty of Mechanical Engineering and Ship Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Marcin Jewartowski | |
| | Teachers | dr inż. Marcin Jewartowski<br>mgr inż. Piotr Jasiukiewicz<br>dr hab. inż. Michał Klugmann<br>dr inż. Waldemar Targański | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 8.0 | 0.0 | 8.0 | 0.0 | 0.0 | 16 |

E-learning hours included: 8.0

Termodynamika II, W, MiBM niestacjonarne, sem.04, letni 22/23 - Moodle ID: 28973
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28973

Termodynamika II, L, MiBM niestacjonarne, sem.04, letni 22/23 - Moodle ID: 29431
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29431

**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 | 16 | 4.0 | 55.0 | 75 |

**Subject objectives**

Students acquire basic knowledge of thermodynamics in the dimension of theory and practice

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_W09] possesses basic knowledge within the range of thermodynamics and fluid mechanics, construction and operation of heat generating devices, process equipment, including renewable energy sources, cooling and air conditioning | The student has knowledge of thermodynamics in the field of vapors, vapour and steam processes and cycles. | [SW1] Assessment of factual knowledge |
| [K6_U06] is able to use mathematical and physical models for analysing the processes and phenomena occurring in mechanical devices within the range of material strength, thermodynamics and fluid mechanics | The student is able to perform the energy balance of thermal devices and analyze the obtained results. | [SU4] Assessment of ability to use methods and tools |

**Subject contents**

LECTURE: Steam and steam properties. Thermodynamic steam processes. Rankine Cycle. Efficiency of steam power plant. Linde Cycle. LABORATORY: Energy balance of heat pump. Thermal analysis of refrigerator. Analysis of compressor.

**Prerequisites and co-requisites**

Knowledge from course of Thermodynamics I

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Reports and oral or written test from laboratories</td><td>56.0%</td><td>50.0%</td></tr>
<tr><td>Written test</td><td>56.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Pudlik W., Termodynamika. Wyd. PG, 1998. 2. Pudlik W. (red.), Termodynamika - zadania i przykłady obliczeniowe. Wyd. PG, 2000. 3. Pudlik W. (red.), Termodynamika - Laboratorium I miernictwa cieplnego. Wyd. PG, 1993. 4. Pudlik W. (red.), Termodynamika - Laboratorium II badania maszyn i urządzeń. Wyd. PG, 1991.</td></tr>
<tr><td>Supplementary literature</td><td>1. Wiśniewski S., Termodynamika techniczna. WNT, 2005</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Describe Rankine Cycle. Describe Linde Cycle.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>