GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

| | | | |
|---|---|---|---|
| Subject name and code | Heat Exchangers, PG_00055494 | | |
| Field of study | Mechanical Engineering | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | 2026/2027 |
| Education level | first-cycle studies | Subject group | Optional subject group<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 | 3 | Language of instruction | Polish |
| Semester of study | 5 | ECTS credits | 3.0 |
| Learning profile | general academic profile | Assessment form | assessment |
| Conducting unit | Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | prof. dr hab. inż. Dariusz Mikielewicz | |
| | Teachers | | |

**Lesson types and methods of instruction**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 15.0 | 0.0 | 0.0 | 15.0 | 0.0 | 30 |

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 | 30 | 8.0 | 37.0 | 75 |

**Subject objectives**

To acquaint the student with the methods of determining the required heat transfer surface in exchangers and their different types

**Learning outcomes**

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools | Performed the heat exchanger design with required calculations and drawings | [SU4] Assessment of ability to use methods and tools<br>[SU3] Assessment of ability to use knowledge gained from the subject |
| [K6_W09] possesses 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 | knows the application of different types of heat exchangers for various applications | [SW1] Assessment of factual knowledge |
| [K6_W11] possesses knowledge on design, technology and manufacturing of machine parts, metrology, and quality control; knows and understands methods of measuring and calculating values describing the operation of mechanical systems, knows calculating methods applied to analyse the results of experiments | Student is able to construct exchanger performance characteristics and evaluate it in terms of different aspects | [SW3] Assessment of knowledge contained in written work and projects |

<table>
<tr><td>Subject contents</td><td>1. Classification of heat exchangers<br><br>2. Applications of heat exchangers in engineering practice<br><br>3, Procedures for determining the heat transfer area using the mean logarithmic temperature difference and epsilon-NTU method<br><br>4, Mini-channel heat exchangers<br><br>5. development of performance characteristics of exchangers</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Thermodynamics, fluid mechanics, engineering graphics</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>lecture - test</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>projekt</td><td>60.0%</td><td>50.0%</td></tr>
</table>
</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Lecture notes</td></tr>
<tr><td>Supplementary literature</td><td>Every book from the area of heat exchangers.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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