



Subject card

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| Subject name and code | Heat Exchangers, PG_00055494 | | | | | | |
| Field of study | Mechanical Engineering | | | | | | |
| Date of commencement of studies | October 2021 | | Academic year of realisation of subject | | 2023/2024 | | |
| Education level | first-cycle studies | | Subject group | | Optional subject group 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 | | [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools | | |
| | [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 | | 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 basic values describing the operation of mechanical systems, knows basic 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 | | |

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