

Nazwa w jęz. angielskim: *Introduction to Power Engineering*

Dane dotyczące zajęć:
Information on course:

Jednostka oferująca: Wydział Inżynierii Środowiska i Energetyki // dr inż. Krzysztof Bochon/ dr inż. Michał Haida

Course offered by: Faculty of Energy and Environmental Engineering // dr inż. Krzysztof Bochon/ dr inż. Michał Haida

Język wykładowy:
Angielski
Language:
English
Strona WWW: Course homepage:
Skrócony opis:
Short description:
During the course, students will be introduced to the fundamental concepts of power engineering. They will learn the basic definitions relating to power engineering, parameters, as well as energy conversion options and their limitations. They will be introduced to basic power engineering technologies and the structure of power systems, power engineering machines, equipment and fittings. During laboratory classes, students will analyse the energy efficiency of selected energy conversion cycles and familiarise themselves with energy installations and selected machinery available in the laboratories of the Department of Energy Machinery and Equipment and the Department of Thermal Engineering.
Opis:
Description:
The course is divided between two lecturers, one from the Department of Power Engineering and Turbomachinery and one from the Department of Thermal Technology on a 50/50% basis. Course content: Lecture (30 hours) 1. Introduction (what is energy and why do we need to convert it?) 2. Energy conversion options 3. Limitations in energy conversion 4. Heat engines (internal combustion piston engines and Stirling engines) 5. Other engines (wind, water, hydraulic, pneumatic and electric) 6. Heating and cooling systems 7. Thermal power plants - basic concepts and cycles 8. Thermal power plants - machinery, equipment and fittings Laboratory (15 hours) 1. Introduction to the laboratory facilities of the Department of Thermal Engineering – technical visits to selected laboratories. 2. Introduction to selected installations and power machinery available at the Department of Power Machinery and Equipment – technical visits to selected laboratories. 3. Analysis of the energy efficiency of selected motor cycles and compressor heat pumps. 4. Nuclear reactor: selected safety issues and the efficiency of nuclear fuel utilisation. Number of contact hours involving academic staff or other course leaders and students: Lecture: 30 hours Laboratory: 15 hours Test: 1 hours Total number of hours: 45

Number of ECTS credits: 6
Literatura:
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Bibliography:
S. L. Dixon, C. A. Hall, Fluid Mechanics and Thermodynamics of Turbomachinery, Elsevier, seventh edition 2014 E. Dick, Fundamentals of Turbomachines, Springer 2015 J. Szargut: "Termodynamika techniczna", Wydawnictwo Politechniki Śląskiej, Gliwice 2010. T. Chmielniak: "Technologie energetyczne", Wydawnictwo Politechniki Śląskiej, Gliwice 2004. J. Marecki: "Podstawy przemian energetycznych", WNT, Warszawa 2000. - Internet content related to the topic of the course.
Efekty uczenia się:
Learning outcomes:
Knowledge The student knows and understands: - selected topics in mathematics, physics, thermodynamics and mechanical engineering, useful for understanding and analysing basic energy processes and the operation of power machinery (K1A_W01, test). - the fundamental processes occurring in selected energy facilities and systems, as well as the basic methods, techniques and tools used in the description and analysis of engineering issues related to energy (K1A_W02, test). - the fundamentals of the construction and operation of typical energy machinery and equipment (K1A_W06, test).
Metody i kryteria oceniania:
Assessment methods and assessment criteria:
Lecture: Test conducted via the Remote Education Platform – comprising 10 questions. The number of points scored divided by 2 constitutes the partial mark for this part of the course. Such a test is conducted for two parts of the course (separately for each lecturer), and the final mark is the average of both tests. Laboratories: mandatory attendance In the event of a student's absence from lectures, they are required to catch up on the material independently, which will be assessed during the test, on an equal footing with other students. The syllabus is valid from the winter semester of the 2026/2027 academic year, and its content is not subject to change during the semester.

Przynależność do grup przedmiotów w cyklach:
Element of course groups in various terms:

Opis grupy przedmiotów Course group description	Cykl pocz. First term	Cykl kon. Last term
przedmioty obieralne studia stacjonarne stopień studiów – dowolny kierunek studiów – dowolny, semestr dowolny elective courses full-time degree - any field of study - any semester - any	2024/25	