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Technical sciences 2 100% Responsible for subject / lecturer: Prof. dr hab. in2. Ewa Tuliszka-Sznitko email: ewa.tuliszka-sznitko@put.poznan.pl tel. 61 6652111 Inzynierii Transportu http://www.twmt.put.poznan.pl/ Prerequisites in terms of knowledge, skills and social competencies: 1 Knowledge 2 Skills 3 Social competencies 7 The student is able to apply the principles of thermodynamics, heat exchange and fluid mechanics. 2 Skills The student is able to improve professional competencies and is ready to collaborate in team competencies Assumptions and objectives of the course: The student is able to improve professional competencies of thermodynamic cycles which can be found in industry. To acquaint the student with the issues of thermodynamic cycles which can be found in industry. To acquaint the student with the issues of thermodynamic cycles which can be found in industry. To acquaint the student with the issues of thet at transport and ecology problems. Study outcomes and reference to the educational results for a field of study up to convection as well as radiation transfer of thermal energy occurring in industrial devices. [M2_U13] Nowledge: I. The student knows how to apply knowledge in the field of thermal energy occurring in industrial devices. [M2_U13] Opender I. The student sk nowledge on the properties of steam power plants, internal combustion engines and heat pumps. The student knows the main	Educati	on areas and fields of sc	ience and art		
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Assessment methods of study outcomes

Rewarding activity in class.

Written final test

Course description

The first and second law of thermodynamics. The perfect, real gases and their polytropic transformations. Phase transitions in thermodynamic terms. Evaporation curve. Thermodynamic cycles and their optimization (recuperation). Gas power cycles, vapor and combined power cycles. Gas condensation (LNG). Thermodynamics of moist air. Methods of solving engineering problems with the conduction, convection and radiation heat transfer. Methods of intensification of heat exchange. Combustion processes.

Basic bibliography:

1. Szargut J. i inni: Zadania z termodynamiki technicznej, P. Śl. 2013

- 2. Szargut J.: Termodynamika techniczna, Wyd. P. Śl. 2011
- 3. Incropera F., DeWitt P., Bergman P., Lavine A.: Fundamentals of heat and mass transfer, Wiley & Sons, 2006
- 4. Wiśniewski St.: Termodynamika techniczna, WNT 1995

5. Tuliszka E. Red.: Termodynamika techniczna. Zbiór zadań, Nr 889, Wyd. P.P.

6. Gutkowski A., Kapusta T. (red) - Zbiór zadań z termodynamiki technicznej, Skrypt PŁ, 2014

Additional bibliography:

1. Furmański P., Domański R.: Wymiana ciepła. Przykłady obliczeń i zadania, Oficyna Wydawnicza Politechniki Warszawskiej, 2002

Result of average student's workload

Activity		Time (working hours)
1. Participation in lectures		15
2. Consolidation of lecture material		7
3. Consultation		2
4. Preparation for classes		5
5. Participation in classes	Participation in classes	
6. Preparation to test		10
7. Participation in test		2
Student's wo	orkload	
Source of workload	hours	ECTS
Total workload	56	2
Contact hours	34	0
Practical activities	0	0