STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Utilization of machines and equipments for transportation by	**1010631331010634833**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**(brak)**	**2 / 3**
Elective path/specialty: **Engineering of Pipeline Transport**	Subject offered in: **Polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time): **full-time**	

No. of hours	No. of credits
Lecture: **2** Classes: **1** Laboratory: **-** Project/seminars: **-**	**2**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**2 100%**
Technical sciences	**2 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of the construction propulsion machinery and equipment for the transport of fluids. In the construction of machines: pumps, fans, blowers and compressors. Basic knowledge of mechanical and thermal loads of machinery and equipment. Knowledge of thermodynamic, economic and environmental assessment measures perfection of machinery and power units. [PRK6]
2	**Skills**	Strict use of terminology concepts of mechanics, thermodynamics, machinery and equipment for pipelines. Conducting qualitative assessment of the operation and quantitative analysis based on measurements of operating parameters. [PRK6]
3	**Social competencies**	Understanding the social and economic consequences of improper or poor maintenance of machines and equipment. The ability to formulate tasks for the rational use of machines and equipment for pipelines. The ability to work and analysis team. [PRK6]

Assumptions and objectives of the course:

Presentation of the qualitative and quantitative aspects of the operation of machines and equipment for pipelines. Measures assess the quality of the operation of machinery and equipment. Adverse developments in aspects of the operation of machinery and equipment for pipelines

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. has advanced and in-depth knowledge in the field of transport engineering, theoretical foundations, tools and means used to solve simple engineering problems - [T2A_W01 [P7S_WG]]

2. has a structured and theoretically founded general knowledge related to key issues in the field of transport engineering - [T2A_W02 [P7S_WG]]

Skills:

1. can acquire information from literature, databases and other sources (in Polish and English), integrate them, make their interpretation and critical evaluation, draw conclusions and formulate and fully justify opinions - [T2A_U01 [P7S_UW]]

2. can communicate in Polish and English using different techniques in a professional environment and in other environments, also using transport engineering issues - [T2A_U12 [P7S_UK]]

Social competencies:

1. understands that in the field of transport engineering, knowledge and skills quickly become obsolete - [T2A_K01 [P7S_KK]]

2. understands the importance of using the latest knowledge in the field of transport engineering in solving research and practical problems - [T2A_K02 [P7S_KK]]

Assessment methods of study outcomes
Exam, final test

Course description
Performance characteristics of pumps, fans, blowers and compressors and engines, diesel engines, gas turbines and electric motors. Cooperation machines przetłaczających fluids drive motors. Cooperation machines przetłaczających fluids rurociągowymi networks. Phenomena specific operation: pompaż, cavitation, aging machinery and equipment. Control and monitoring of consumption. Methods of prevention of unfavorable developments and threats

Basic bibliography:

1. Fortuna St.: Wentylatory. Podstawy teoretyczne, zagadnienia konstrukcyjno eksploatacyjne i zastosowanie. TECHWENT. Kraków 1999
2. Tuliszka E. Turbiny cieplne. WNT. Warszawa 1974
3. Tuliszka E. Sprężarki, dmuchawy i wentylatory. WNT. Warszawa 1971
4. Jędral A.: Pompy. WNT. Warszawa. 2002

Additional bibliography:

Result of average student's workload

Activity	**Time (working hours)**
1. Participation in the lecture	15
2. Consultation	2
3. Preparing to pass	2
4. Exam	3
5. Participation in exercises	15
6. consultations	2
7. Preparing to pass	2
8. Final test	3

Student's workload

Source of workload	**hours**	**ECTS**
Total workload	58	2
Contact hours	58	2
Practical activities	0	0