STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Dynamics of gas transportation proceses		**1010631371010633272**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**(brak)**	**4 / 7**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Engineering of Pipeline Transport	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**full-time**

No. of hours				No. of credits
Lecture: **1**	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**	The student has a basic knowledge of mathematics, physics and fluid mechanics The student knows and understands the basic phenomena of fluid mechanics. [PRK4]
2	**Skills**	The student is able to use the concepts and methods in the description of the phenomena associated with the movement of ideal gases. Students can use their knowledge to analyze specific events and processes related to the gas flow. Students are able to solve specific problems related to the ideal gas flow. [PRK4]
3	**Social competencies**	Students can work together in a group, taking the different roles. The student is able to prioritize important in solving the tasks posed in front of him. The student demonstrates self-reliance in solving problems, acquire and improve their knowledge and skills. [PRK4]

Assumptions and objectives of the course:

To familiarize students with basic knowledge of theoretical governing the movement of ideal gases

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

Knowledge:

1. has an extended and deep knowledge of mathematics useful for formulating and solving complex technical tasks concerning various means of transport - [T1A_W01 [P6S_WG]]

2. has extended and in-depth knowledge of physics useful for formulating and solving selected technical tasks, in particular for correct modeling of real problems - [T1A_W02 [P6S_WG]]

Skills:

1. is able to obtain information from various sources, including literature and databases, both in Polish and in English, appropriate to integrate them, make their interpretation and critical evaluation, draw conclusions, and fully justify the opinions they - [T1A_U01 [P6S_UW]]

2. can properly plan and perform experiments, including measurements and computer simulations, interpret the obtained results, and correctly draw conclusions from them - [T1A_U03 [P6S_UW]]

3. can assess the computational complexity of algorithms and transport problems - [T1A_U08 [P6S_UW]]

Social competencies:

1. understands that in technology, knowledge and skills quickly become obsolete - [T1A_K01 [P6S_KK]]
2. is aware of the importance of knowledge in solving engineering problems and knows examples and understands the reasons for malfunctioning transport systems that led to serious financial and social losses or to serious health and even life - [T1A_K02 [P6S_KK]]

Assessment methods of study outcomes
Exam
Course description
Bernoulli's equation. Critical parameters of gas. Classification of the gas flow. Wave phenomena in one-dimensional flow. Oblique shock wave. Polar shock wave. The shock wave in a flat opływie wedge. Some problems of the theory of linear. Linearization equation velocity potential. Transformation Prandtl and Glauerta. Some analytical solutions.
Basic bibliography:
Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Participation in the lecture	15
2. Consultation	5
3. consolidation of the lecture	20
4. Preparing to pass	15
5. Exam	2

Student's workload

Source of workload	hours	ECTS
Total workload	100	2
Contact hours	0	0
Practical activities	0	0