STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Pneumatic and Hydraulic Conveyor Systems	**1010622331010632256**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**(brak)**	**2 / 3**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Ecology of Transport	**Polish**	**obligatory**

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

No. of hours				No. of credits
Lecture: **1**	Classes: **1**	Laboratory: **1**	Project/seminars: **-**	**3**

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	**3 100%**
Technical sciences	**3 100%**

Responsible for subject / lecturer:

PhD Łukasz Semkło
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Transport Engineering
ul. Piotrowo 3 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	General technical issue of transport of gases and liquids. Some aspects of thermodynamics. [PRK6]
2	**Skills**	Calculations transmissions liquids and gases. Predicting risk for any transporting materials transferred pneumatically and hydraulically [PRK6]
3	**Social competencies**	Working in an interdisciplinary team. Ability to lead a team and knowledge team [PRK6]

Assumptions and objectives of the course:

Understanding transport in pipelines: pneumatic (air) and hydraulic (water). Basis of design and the principles of construction and operation

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

Final test

Course description

Pneumatic and hydraulic Transportation, examples of applications and technical and operational requirements. Media: water and air. Pipelines: construction and technical equipment supplies. Compressor and pumping stations. Performance characteristics of the transport system. Failures pneumatic conveying systems and hydraulics. Monitoring of operation of pneumatic conveying systems and hydraulics. Loss of flow in pipelines. Issues strength. Fundamentals of building. Diagnostics operating transport systems. Fundamentals of design calculations and hydraulic pneumatic transport. The economics of exploitation. Erosion and corrosion of pipelines. Renovation of pipelines.

Basic bibliography:

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. 1 Participation in the lecture	15
2. Consultation	3
3. Preparing to pass	12
4. Final test	3
5. Participation in exercises	15
6. consultations	3
7. Preparing to pass	6
8. Final test	2
9. Participation in laboratory exercises	15
10. The consolidation exercise report content	3

Student's workload

Source of workload	hours	ECTS
Total workload	77	3
Contact hours	56	2
Practical activities	18	1