

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Technologies of Fuel Gas Networks Exploitation		Code 1010631321010634494
Field of study Transport	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
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 Lecture: 2 Classes: - Laboratory: - Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer: dr hab. inż. Jarosław Bartoszewicz email: jaroslaw.bartoszewicz@put.poznan.pl tel. 616652331 Faculty of Working Machines and Transportation ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Students have an understanding of the basics of machine design, and compression of the basics of thermodynamics, fluid mechanics
2	Skills	Students have an understanding of the basics of machine design, and compression of the basics of thermodynamics, fluid mechanics
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.
Assumptions and objectives of the course: A study of the knowledge of the safe and economical operation of gas networks		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has a detailed knowledge of the technical operation, reliability and safety of systems, including: praxiological, technical and economic aspects of operating transport equipment - [K2A_W16]		
2. Has a basic knowledge of metrology, including: methods of measurement, characteristics of measuring instruments and their classification according to the purpose, principles of operation and characteristics of metrolog - [K2A_W17]		
Skills:		
1. Is able to obtain information from the literature, internet, databases and other sources in Polish and English. Can integrate the information to interpret and learn from them, create and justify opinions - [K2A_U01]		
2. Has the preparation required in industrial environment, knows safety rules for the job, is able to use for technical standards on unification, safety and recycling of machinery and equipment - [K2A_U08]		
3. Is able to estimate the materials and environmental cost and labor input to develop a logistics object of own design - [K2A_U09]		
4. Is able draw by hand machine elements and schematics in accordance with the principles of engineering drawing and European standards - [K2A_U12]		
Social competencies:		

1. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment and responsibility for own decisions in short and long-term aspect - [K2A_K02]
2. Has a sense of responsibility for one's own work and is willing to comply with the principles of teamwork and taking responsibility for collaborative tasks - [K2A_K04]
3. Is able to identify and resolve the dilemmas associated with the profession, among others. problems at the technology/environment level - [K2A_K06]
4. Is aware of the transfer of knowledge to society, takes steps to ensure that the information is understandable, presents different solutions and points of view - [K2A_K08]

Assessment methods of study outcomes		
Final test		
Course description		
Types of gas networks: high, low and medium pressure. Examples of gas in power plants-refineries, power plants, chemical plants. Network Security. Gas flow networks. Differential pressure and flow, pressure drop calculation. Monitoring of pressure and flow networks. Monitoring of the properties of gases - gas composition, the content of impurities. Gas odorant systems, protection against interruption of gas pipelines. Solving Malfunctions, security of gas supply		
Basic bibliography:		
1. Bąkowski Konrad: Sieci i instalacje gazowe. Poradnik projektowania, budowy i eksploatacji, WNT 2008		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in the lecture	30	
2. Consultation	3	
3. Preparing to pass	10	
4. Final test	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	45	2
Contact hours	25	1
Practical activities	20	1