

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Pipeline networks		Code 1010631371010636005
Field of study Transport	Profile of study (general academic, practical) general academic	Year /Semester 4 / 7
Elective path/specialty Engineering of Pipeline Transport	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: - Laboratory: 1 Project/seminars: 1		No. of credits 5
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer:		
PhD Łukasz Semkło email: lukasz.semklo@put.poznan.pl tel. 616652213 Faculty of Machines and Transport ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	The basics of power engineering and the fundamentals of machine construction, construction and equipment of the pipeline and power grid
2	Skills	Construction of computational algorithms. Calculations in Excel
3	Social competencies	Knowledge and understanding of general technical energy processes
Assumptions and objectives of the course:		
-Introduction to the issues of transmission systems for fluids and gases in pipelines and electricity. Mastering specialist vocabulary.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. has structured, theoretically founded knowledge in the field of traffic engineering, knows analytical models of traffic flows, optimization of transport networks - [K1A_W05] 2. has basic knowledge in the field of macroeconomics, knows: the management process and its elements, entities and main factors of the management process - [K1A_W07] 3. has detailed knowledge of transport systems, knows: the importance of transport in the socio-economic system of the country, region and city - [K1A_W10]		
Skills:		
1. Acquiring information from literature, the Internet, databases and other sources, in Polish and foreign languages, interpreting and drawing conclusions, and creating parallel concepts. - [K1A_U01] 2. Using modern analysis and research tools - [K1A_U06]		
Social competencies:		
1. Understanding the need for continuous learning and the need to acquire new knowledge for professional development - [K1A_K01] 2. understands the non-technical aspects and effects of the transport engineer's operation and its environmental impact and responsibility for the decisions made, the consequences of their own actions - [K1A_K02] 3. Identifying and resolving dilemmas related to the profession, among others. problems on the technical level - the environment - [K1A_K06]		

Assessment methods of study outcomes		
Examination, report on laboratory exercises, project		
Course description		
-Construction and components of pipeline and power networks. Seminar analysis management of various areas of the transmission grids used. Discussion on the elements of various systems: transmission and distribution companies. Markets of electricity, gas and oil, heat and water. Energy security of the country, certainty of supplies for people and enterprises, security of transmission for people and equipment, minimization of the effects of aging networks, machines and fittings. Management tools. Economics and other criteria in transmission systems. Forecasting the development of transmission networks		
Basic bibliography:		
1. Dembińska-Cyran I., Gubała M.: Podstawy zarządzania transportem w przykładach. Wydawnictwo Instytut Logistyki i Magazynowania. Poznań 2005		
2. Logistyka systemów przesyłowych		
Additional bibliography:		
1. Literatura: wybór czasopism branżowych		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation for the lectures	15	
2. Consultations	2	
3. Preparation for the exam	4	
4. Participate in exam	2	
5. preparation for the laboratory exercises	4	
6. particion in laboratory exercises	15	
7. Strengthening the content of exercises / report	4	
Student's workload		
Source of workload	hours	ECTS
Total workload	115	5
Contact hours	45	2
Practical activities	70	3