

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Resources of natural gases fuels		Code 1010632111010635534
Field of study Mechanical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 1
Elective path/specialty -	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: 1 Classes: - Laboratory: - Project/seminars: -		No. of credits 1
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 technical sciences		ECTS distribution (number and %) 1 100%
Responsible for subject / lecturer: dr inż. Andrzej Barczyński email: andrzej.barczynski@hotmail.com tel. 61 665 2218 Maszyn Roboczych i Transportu ul. Piotrowo 3A, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge in the field of chemistry, physics, thermodynamics and geology.
2	Skills	Student should have skills required to solve engineering problems with scientifically valid methodologies. Can effectively acquire the information from various sources including datasheets, literature and Internet
3	Social competencies	Knows the limitations of his or her own knowledge and skills, understands the non-technical aspects and results of engineering activity and their importance
Assumptions and objectives of the course: To acquaint students with the theoretical and practical problems related to the mining and processing technology of natural gases		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Has general knowledge in the field of standardization, recommendations and EU directives, national, international and industry standards in mining of natural gases - [K2A_W09] 2. Has an extended knowledge in field of gas extraction - [K2A_W16] 3. Has the knowledge about the current developments in field of gas production - [K2A_W12]		
Skills: 1. Is able to obtain information from the literature, internet, databases and other sources. Can integrate the information to interpret and learn from them, create and justify opinions - [K2A_U03] 2. Is able to freely use an international language in contacts with professionals from the same field of study - [K2A_U01]		
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 decisi - [K2A_K02] 2. Is able to set priorities for realization of undertaken tasks - [K2A_K04] 3. Is able to interact in a group taking on the different roles - [K2A_K03]		
Assessment methods of study outcomes		
Lecture ? the written examination		

Course description		
<p>Conventional sources of natural gases, non-conventional sources of natural gases, shale gas, tight gas, sources of natural gases in Poland, Europe and World, low calorific natural gases, methods of horizontal and vertical drilling, technical and economic aspects of the use of LNG, production process of LNG, transport and storage process of liquid natural gas , methods of diversification of gas supplies, major gas supplier in Poland and EU, gas hydrates, production of gaseous synthetic fuels, The technical and economic aspects of the recovery of helium and other trace gases from natural gas, Cryogenic process, low temperature processes of disintegration of gas, non-cryogenic process</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Jacek Molenda, GAZ ZIEMNY Paliwo i Surowiec 2. William Nuttall, Richard Clarke, Bartek Glowacki, The Future of Helium as a Natural Resource 3. Committee on Understanding the Impact of Selling the Helium Reserve; National Materials Advisory Board 4. National Research Council, Selling the Nation's Helium Reserve 		
<p>Additional bibliography:</p>		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in the lecture	15	
2. Fixing the lecture	5	
3. Consultation for the lecture	2	
4. Participation in the completion of the lectur	2	
5. Preparing to pass the lecture	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	34	1
Contact hours	17	0
Practical activities	0	0