STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Computer Aided Designing and Engineering for Fluids and Gases	**1010631321010634493**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**(brak)**	**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	No. of credits
Lecture: **1** Classes: **-** Laboratory: **2** Project/seminars: **-**	**4**

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	**4 100%**
Technical sciences	**4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Knowledge of various aspects of the basics of pipeline transport engineering and the basics of thermodynamics, fluid mechanics and physical chemistry of liquids
2	**Skills**	Performing calculations and solving problems in Excel, learning new programs
3	**Social competencies**	Group (team) to perform tasks.

Assumptions and objectives of the course:

Knowing specialized algorithms and procedures. Solving selected examples

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

Exam, report laboratory exercises

Course description

Procedures for calculating physical parameters of water, steam, natural gas and other gaseous solutions. Procedures for calculating the flow in pipelines. Procedures for calculating the flow in turbomachinery channels. The calculation of the parameters of pumps, compressors and gas turbines based on operating characteristics under varying conditions. Computer support calculation of the thermal properties of gas and liquid under conditions of transport. Computer aided design of transmission pipelines. Computer support analysis of the monitoring parameters pipeline transport

Basic bibliography:

1. Ufnalski Waldemar: Obliczenia fizykochemiczne na Twoim PC. {Problemy, algorytmy, programy, zajęcia wspomagane mikrokomputerem. Podstawy termodynamiki}. Wydawnictwa Naukowo-Techniczne. Warszawa 1997 {www.wnt.com.pl}

2. Ufnalski Waldemar, Mądry Kazimierz: Excel dla chemików ... i nie tylko. Wydawnictwa Naukowo-Techniczne. Warszawa 2000 {www.wnt.com.pl}

3. Kuciński Krzysztof: abc... Excela 2001. Wydawnictwo ?Edition 2000?. Kraków 2001 {www.EDITION2000.COM.PL}

4. Bernard V. Liengme: Microsoft Excel w nauce i technice. Wydawnictwo RM. Warszawa 2002 {www.rm.com.pl; http://www.stfx.ca/people/bliengme}

5. Bernard V. Liengme: Microsoft Excel w biznesie i zarządzaniu. Wydawnictwo RM. Warszawa 2002 {www.rm.com.pl; http://www.stfx.ca/people/bliengme}

6. Szapiro Tomasz (redakcja; praca zbiorowa) i inni: Decyzje menedżerskie z Excelem. Polskie Wydawnictwo Ekonomiczne. Warszawa 2000. {www.pwe.com.pl}

Additional bibliography:

Result of average student's workload

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

Student's workload

Source of workload	hours	ECTS
Total workload	90	4
Contact hours	44	2
Practical activities	46	2