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	**general academic**	**1 / 2**
Elective path/specialty: **Engineering of Pipeline Transport**	Subject offered in: **Polish**	Course (compulsory, elective): **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: **-** Laboratory: **2** Project/seminars: **-**	**4**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
other	**university-wide**

Education areas and fields of science and art	ECTS distribution (number and %)

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 a structured, theoretically founded knowledge in the field of informatics, is familiar with operating systems, programming languages at a basic level, information technology, multimedia technology, graphics, animation, databases - [K2A-W06]

2. Has a detailed knowledge of the transport systems modeling, models of transport systems, the distribution of streams in transport networks - [K2A-W10]

3. Has a structured, theoretically founded knowledge in the field of engineering graphics and machine construction: technical drawing, objects projecting, the basic principles of engineering graphics, use of CAD (Computer Aided Design) graphics in the construction of machines - [K1A-W13]

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]

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