POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Computer support in the transport of liquids and gases

Course

Field of study	Year/Semester
Transport	2/2
Area of study (specialization)	Profile of study
Engineering of Pipeline Transport	general academic
Level of study	Course offered in
Second-cycle studies	Polish
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	30	
Tutorials	Projects/seminars	

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

PhD Łukasz Semkło

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phone : 61 6652213

Faculty of Environmental Engineering and
Energy

Piotrowo 3 street, 60-965 Poznan

Responsible for the course/lecturer:

Prerequisites

Knowledge of various issues from the basics of pipeline transport engineering and the basics of thermodynamics, fluid mechanics and fluid physics. Performing calculations and solving tasks in Excel, learning new programs. Group (team) performance of tasks.

Course objective

Understanding specialized algorithms and procedures. Solving selected examples

Course-related learning outcomes

Knowledge

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has advanced and in-depth knowledge of transport engineering, theoretical foundations, tools and resources used to solve simple engineering problems

has ordered and theoretically founded general knowledge related to key issues in the field of transport engineering

Skills

is able to obtain information from literature, databases and other sources (in Polish and English), integrate them, perform their interpretation and critical assessment, draw conclusions and formulate and comprehensively justify opinions

can - when formulating and solving engineering tasks - integrate knowledge from various transport areas (and, if necessary, also knowledge from other scientific disciplines) and apply a systemic approach, also taking into account non-technical aspects

can - using, among others conceptually new methods - solve complex tasks in the field of transport engineering, including atypical tasks and tasks containing a research component

is able to communicate in Polish and English using various techniques in a professional environment and in other environments, also using transport engineering issues

Social competences

understands that in the field of transport engineering, knowledge and skills are rapidly becoming obsolete

understands the importance of using the latest knowledge in the field of transport engineering in solving research and practical problems

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - written exam. Obtaining credit from a minimum of 51% of the points possible to get. There is a possibility of an oral question to raise the grade.

Laboratories - final project (computer program)

Programme content

- Calculation procedures for physical parameters of water, steam, natural gas and other gas solutions.

- Calculation procedures for flow in pipelines.

- Calculation procedures for flow in flow machinery channels.

- Calculation of operating parameters of pumps, compressors and gas turbines on the basis of operational characteristics in variable conditions.

- Computer aided calculations of thermal properties of gases and liquids in transport conditions.

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- Support in the design of transmission pipelines.

- Computer aided analysis of monitoring of pipeline transport parameters

- Simulation of stationary flows in pipelines using the ANSYS Fluent program.

- Simulation of transient flows using ANSYS Fluent

Teaching methods

Informative lecture (conventional) (information transfer in a systematic way)

Bibliography

Basic

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}

Additional

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

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests) [1]	55	2,0

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[1] delete or add other activities as appropriate