Zachodniopomorski Uniwersytet Technologiczny w Szczecinie

Faculty of Chemical Technology and Engineering

Field of study	Chemical Engineering		
Mode of study	stationary	*Level*	first cycle
Graduate's qualification	inżynier		
Area(s) of study	nauki techniczne		
Educational profile	general academic		
Module			
Course unit	**Technology of Resources**		
Code	ChEn_1A_S_C14		
Field of specialisation			
Administering faculty	Institute of Inorganic Chemical Technology and Environmental Engineering		
ECTS	5,0	*ECTS (forms)*	5,0
Form of course credit	credits	*Language*	english
Electives		*Elective group*	

Form of instruction	*Code*	*Semester*	*Hours*	*ECTS*	*Weight*	*Credit*
lecture	W	5	30	2,0	0,50	credits
laboratory course	L	5	30	3,0	0,50	credits

Leading teacher	Kowalczyk Agnieszka (Agnieszka.Kowalczyk@zut.edu.pl)
Other teachers	Janus Ewa (Ewa.Janus@zut.edu.pl), Kowalczyk Agnieszka (Agnieszka.Kowalczyk@zut.edu.pl), Urbala Magdalena (Magdalena.Urbala@zut.edu.pl), Wilpiszewska Katarzyna (Katarzyna.Wilpiszewska@zut.edu.pl), Wróbel Rafał (Rafal.Wrobel@zut.edu.pl)

Prerequisites

W-1	Basic knowledge in chemical technology and chemical processes.

Module/course unit objectives

C-1	The course is aimed at giving an intoduction to technology of recourses in the chemical enginering processes. Student will be able to difine basic groups of recourses and their matufacturing methods and applications for chemical technology.

Course content divided into various forms of instruction		*Number of hours*
T-W-1	Natural gas - fundamentals, evolution of the natural gas industry, preparing natural gas for transmission, new potential source for natural gas	4
T-W-2	Petroleum and its products- fundamentals, economics and politics, exploration and production, transportation and storage, refining, products: fuels and chemicals, safety and the environment, the future of petroleum	6
T-W-3	Coal- origin and classification of coal, structure, coal technology for chemicals	5
T-W-4	Biomass- fundamentals and converting biomas to chemical products	4
T-W-5	Fats and oils sources and their characterisic; Processes in fats and oil production (pressing, extraction, refining); Modification of fats and oils - hydrogenation, interesterification, splitting, fractionation	4
T-W-6	Inorganic resources - sulphur, sodium, phosphates, titania, metals, building materials	5
T-W-7	Energy resources – coal, lignite, crude oil, natural gas, uranium	2
T-L-1	Pertoleum- visit PCK Raffinerie GmbH	6
T-L-2	Isolation and characterization of starch	6
T-L-3	Determination of fatty acids profile and specifis numbers for fats and oils from different sources	6
T-L-4	Titania production – visit of Police S.A. factory	6
T-L-5	Phospates in fertilizers production - visit of Police S.A. factory	6

Student workload - forms of activity		*Number of hours*
A-W-1	Participation in lectures	30
A-W-2	Individual literature study	30
A-L-1	Participation in laboratory exercises	30
A-L-2	Preparation for practical classes	15
A-L-3	Literature studies	5
A-L-4	Development of results	15
A-L-5	Writting a class report	15
A-L-6	Consultations	10

Teaching methods / tools	
M-1	Information lecture
M-2	Laboratory excercisies

Evaluation methods (F - progressive, P - final)		
S-1	P	Written exam
S-2	F	Activity on the lectures and laboratory
S-3	P	Laboratory - report and test

Designed learning outcomes	Reference to the learning outcomes designed for the fields of study	Reference to the learning outcomes defined for the particular areas of education	Reference to learning outcomes leading to the degree of "inżynier"	Course objectives	Course content	Teaching methods	Evaluation methods
Knowledge							
ChEn_1A_C14_W01 Student knows the basic knowledge of recourses used in chemical technology and thier manufacturing methods and application.	ChEn_1A_W05 ChEn_1A_W14	P6S_WG_TA11	P6S_WG_IA11	C-1	T-W-1 T-W-5 T-W-2 T-W-6 T-W-3 T-W-7 T-W-4	M-1	S-1
Skills							
ChEn_1A_C14_U01 Student in able to select basic recourses for chemical processes andto practical using of knowledge in chemical technology.	ChEn_1A_U01 ChEn_1A_U03 ChEn_1A_U05 ChEn_1A_U08 ChEn_1A_U16	P6S_UO P6S_UU P6S_UW_TA11 P6S_UW_TA14	P6S_UW_IA11 P6S_UW_IA14	C-1	T-W-1 T-W-4 T-W-2 T-W-5 T-W-3 T-W-6	M-1 M-2	S-1 S-2 S-3
Other social / personal competences							
ChEn_1A_C14_K01 Student understands the need of train and improve his/her professional and personal competences, especially for the teamwork.	ChEn_1A_K01 ChEn_1A_K03 ChEn_1A_K04 ChEn_1A_K05	P6S_KK P6S_KO P6S_KR		C-1	T-W-1 T-W-5 T-W-2 T-W-6 T-W-3 T-W-7 T-W-4	M-1	S-2 S-3

Required reading

1. John Tabak, Coal and Oil, Facts on file Inc., New York, 2009
2. H. Wittcoff, B. Reuben, J. Plotkin, Industrial Organic Chemicals, Wiley-Interscience, 2004
3. H. Weissermrl, H.J. Arpe, Industrial Organic Chemistry, Wiley-VCH GmbH, 2003
4. James G. Speight, The chemistry and technology of petroleum, Taylor and Francis Gropu, 2006