## Zachodniopomorski Uniwersytet Technologiczny w Szczecinie

## Faculty of Chemical Technology and Engineering

Field of study		Chem	nical Engineerin						
Mode of study		stationary Level first cycle				\ <b>A</b> /T:1	C L		
Graduate's qualification		inżyn	ier	Ch					
Area(s) of study		nauk	_						
Educational profile		general academic					<u> </u>		
Module									
Course uni	it	Indu	strial Chemist						
Code		ChEn							
Field of sp	ecialisation								
Administering faculty		Instit	ute of Organic (						
ECTS		6,0			_				
Form of course credit		examination		Language english					
Electives			Elective group						
Form of ins	struction	Code	Semester	Hours	ECTS	Weight	Credit		
lecture		W	6	30	3,0	0,50	examination		
project cou	urse	Р	6	30	3,0	0,50	credits		
l eading te	acher	lanus	Ewa (Ewa Janu						
Other teachers		Janus Ewa (Ewa.Janus@zut.edu.pl), Kowalczyk Krzysztof (Krzysztof.Kowalczyk@zut.edu.pl), Kowalczyk Agnieszka (Agnieszka.Kowalczyk@zut.edu.pl), Lendzion-Bieluń Zofia (Zofia.Lendzion-Bielun@zut.edu.pl)							
Prerequisit	tes			· · · · · ·					
W-1	Chemistry								
W-2	Introduction to Che	troduction to Chemical Technology							
W-3	Fundamentals of Polymer Technology								
Module/co	Module/course unit objectives								
C-1	Student is well-grouded in principles, knowledge of scientific and techniques of industrial chemistry								
C-2	student has a mea	as a meaningful knowledge of chemical industries							
С-3	student is prepared for professional participation in chemical industries and to use and adapt his knowledge to solve of problems								
Course content divided into various forms of instruction							Number of hours		
T-W-1	Industrial methods of the synthesis gas production						2		
T-W-2	Technologies for th		2						
T-W-3	rechnologies of the phosphoric acid production (physicochemical basis of the process, operations and unit processes, process kinetics, waste and air pollution)								
T-W-4	Technology of the sulfuric acid production (physicochemical basis of the process, operations and unit processes, process kinetics, waste and air pollution)								
T-W-5	Soda production (physicochemical basis of the process, operations and unit processes, process kinetics, waste and air pollution)								
T-W-6	Technology of alky characterisation, m	3							
T-W-7	Liquid and solid epoxy resins technology (technology fundamentals, products characterisation, modifications and application)						2		
T-W-8	Technology of isocy and modifications)	2							
T-W-9	Technology of selected thermoplastics (polyolefines, PMMA, PS, PVAI)								
T-W-10	Industrial processe catalytic cracking,	acking,	2						
T-W-11	Industrial processe		1						
T-W-12	Industrial processe	2							
T-W-13	Industrial processes of fatty acids, methyl esters of fatty acids and fatty alcohols production 2								
T-W-14	Technologies of soaps and chosen surfactants and detergents production								
Т-Р-1	Technological proje	10							
Т-Р-2	modification						10		
Т-Р-З	Detailed technological consideration of chosen industrial processes of organic compound production								

Student wo	workload - forms of activity									hours		
A-W-1	Participation in lectures									30		
A-W-2	Individual studies of literature									30		
A-W-3	Preparation to exam									30		
A-P-1	Consultation with the teacher									30		
A-P-2	Individual literatury studies and solving of problems									45		
A-P-3	Prepara			15								
Teaching methods / tools												
M-1	Information lecture with multimedial presentation											
M-2	Discussion during lectures											
M-3	Preparing of the project											
M-4	Consultation											
Evaluation methods (F - progressive, P - final)												
S-1	Р											
S-2	Р	P Evaluation of the prepared project										
5-3	F	Evaluation of participation in discussion										
5-4	F	F evaluation of the subsequent stages of the project preparation										
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	<u>)</u>											
ChEn_1A_C21_W01 Student can describe technologies of industrial production in the field of chemistry (inorganic, organic and polymer chemistry); has the advanced knowledge of the fundamentals of industrial chemistry			ChEn_1A_W07 ChEn_1A_W08	P6S_WG_TA11		C-1 C-2 C-3	T-P-1 T-P-2 T-P-3 T-W-1 T-W-2 T-W-3 T-W-4 T-W-5 T-W-6	T-W-7 T-W-8 T-W-9 T-W-10 T-W-11 T-W-12 T-W-12 T-W-13 T-W-14	M-1 M-2 M-3 M-4	S-1 S-2 S-3 S-4		
Skills												
ChEn_1A_C21 Student can u information or depth examin as connection practical aspe	_U01 se literat n the ind ate of op betweer cts of ch	ture sources and other tools to find ustrial chemical processes and can in- erational consideration of processes such p products and process, theoretical and emical processes.	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 C-2 C-3	T-P-1 T-P-2	T-P-3	M-3 M-4	S-2 S-4		
Other socia	al / per	sonal competences										
ChEn_1A_C21 Student can ri technological, chemical proo these differen	_K01 eflect on enginee luction a t aspects	the different (fundamentals, ring, environmental) aspects of industrial nd understands the linkages between s of industrial chemical production	ChEn_1A_K01 ChEn_1A_K03 ChEn_1A_K04 ChEn_1A_K05	P6S_KK P6S_KO P6S_KR		C-1 C-2 C-3	T-P-1 T-P-2 T-P-3 T-W-1 T-W-2 T-W-3 T-W-4 T-W-5 T-W-6	T-W-7 T-W-8 T-W-9 T-W-10 T-W-11 T-W-12 T-W-13 T-W-14	M-1 M-2 M-3 M-4	S-1 S-2 S-3 S-4		
Required reading												
1. Kemeth A. Kobe, Inorganic process industries												
2. James A. Kent, Industrial Chemistry												
3. R. J. Jennings, Catalytic ammonia synthesis, Fundamentals and Practice												
4. Pierre Becker, Phosphates and phosphoric acid, Raw Materials, Technology and Economics of the wet process												
5. Werner W. Duecker, James R. West, The manufacture of sulfuric acid												
6. Wicks Z., Jones F. et al, Organic coatings, Wiley, Hoboken, 2007												
7. Manea M., High solids binders, Vincentz, Hannover, 2008												