## Zachodniopomorski Uniwersytet Technologiczny w Szczecinie

## Faculty of Chemical Technology and Engineering

Field of study		Cł	hem	ical Engineering								
Mode of study			tatio	nary	\A/T:L	C L						
Graduate's qualification		<i>ication</i> in:	iżyni	er	VV I 11	Ch						
Area(s) of study		na	auki	techniczne	_	_						
Educational profile		le ge	ener	al academic	11 _	<u> </u>						
Module												
Course un	Course unit		ase	Studies in Che								
Code		Cł	hEn_	1A_S_C22a								
Field of specialisation		ation										
Administering faculty		culty In Pr	nstitu roteo	ute of Chemica ction Processes								
ECTS		4,	4,0 ECTS (forms) 4,0									
Form of course credit		<i>redit</i> cr	credits La		Language	english						
Electives	Electives		8		Elective group							
Form of in:	structio	on Co	ode	Semester	Hours	ECTS	Weight	Credit				
lecturing c	ourse		A	6	15	1,0	0,50	credits				
seminars			S	6	45	3,0	0,50	credits				
l eading te	acher	AI	leksi	andrzak Tomasz	(Tomasz.Aleksand	hrzak@zut.edu.pl)						
Other teachers		Al (P	Aleksandrzak Tomasz (Tomasz.Aleksandrzak@zut.edu.pl), Pianko-Oprych Paulina (Paulina.Pianko@zut.edu.pl), Witkiewicz Konrad (Konrad Witkiewicz@zut.edu.pl)									
Prereguisit	tes											
W-1	Passing	g subjects from	sem	ester I-V								
Module/co	urse ur	nit objectives										
C-1	The air	n of the course	is to	familiarize stude	nts with methods of s	solving problems usign	case studies app	proach.				
Course cor	ntent d	ivided into va	ariou	s forms of instru	ıction			Number of hours				
T-A-1	Flowsh		5									
T-A-2	Economic analysis											
Т-А-З	Optimization											
T-S-1	Studen Discus	ts' presentatior sion on the pres	ns of senta	results of their ca ations between the	se studies of selecte e seminar participant	d Chemical Engineering ts.	g problems.	45				
Student we	orkload	l - forms of ac	ctivit	ТУ				Number of hours				
A-A-1	Particip		15									
A-A-2	Individ	Individual literature studies										
A-A-3	Individual tasks solving											
A-A-4	Consul	Consultations										
A-5-1 A S 2	Participation in seminars 45											
A-3-2 A-S-3	Individual Solution of problems 30 Preparing presentations 4											
A-5-5 A-5-4	Individual literature studies											
A-S-5	Consultations											
Teaching r	nethod	ls / tools										
M-1	Semina	ar										
M-2	Discussion											
M-3	Case study											
M-4	M-4 Classes											
Evaluation	metho	ds (F - progre	essiv	e, P - final)								
S-1	F Assessment based on evaluation of the given presentation and activity during discussions (seminar).											
5-2	Р	P Written test (classes)										

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	Cours	e content	Teaching methods	Evaluation methods					
Knowledge													
ChEn_1A_C22a_W01 The student has knowledge in the subject of case analysis in the field of chemical engineering.	ChEn_1A_W06 ChEn_1A_W07 ChEn_1A_W08 ChEn_1A_W11 ChEn_1A_W13 ChEn_1A_W14	P6S_WG_TA11	P65_WG_IA11	C-1	T-A-1 T-A-2	T-A-3 T-S-1	M-1 M-2 M-3 M-4	S-1 S-2					
Skills													
ChEn_1A_C22a_U01 Studdent can perform a case study for selected Chemical Engineering problems.	ChEn_1A_U01 ChEn_1A_U03 ChEn_1A_U05 ChEn_1A_U05 ChEn_1A_U08 ChEn_1A_U08 ChEn_1A_U09 ChEn_1A_U14 ChEn_1A_U16	P6S_UO P6S_UU P6S_UW_TA11 P6S_UW_TA12 P6S_UW_TA12 P6S_UW_TA14	P6S_UW_IA11 P6S_UW_IA12 P6S_UW_IA13 P6S_UW_IA14	C-1	T-A-1 T-A-2	T-A-3 T-S-1	M-1 M-2 M-3 M-4	S-1					
Other social / personal competences													
ChEn_1A_C22a_K01 Student understands the need for continuous training and development in the field of case studies	ChEn_1A_K01 ChEn_1A_K03 ChEn_1A_K04 ChEn_1A_K05	P6S_KK P6S_KO P6S_KR		C-1	T-S-1		M-1 M-2 M-3 M-4	S-1 S-2					
Required reading													
1. M. S. Ray, D. W. Johnston, Chemical Engineering Desig	gn Project: A Cas	e Study Appro	ach, Taylor &	Francis	s, 1998								
2. R. K. Sinnott, Chemical Engineering Design, Elsevier Butterworth-Heinemann, Oxford, 2005													

## Supplementary reading

Dym, C.L., Agogino, A.M., Eris, O., Frey, D.D., Leifer, L.J., Engineering design thinking, teaching, and learning, 2005, Journal of Engineering Education, Vol. 94, No. 1, pp. 103-119.
 Fromm, E., The changing engineering educational paradigm, 2003, Journal of Engineering Education, Vol. 92, No. 2, 2003, pp. 113-121.