

FACULTY Chemistry					
<b>SUBJECT CARD</b>					
Name of subject in Polish	Trendy w inżynierii chemicznej				
Name of subject in English	Trends in chemical engineering				
Main field of study (if applicable):	Chemical Engineering				
Specialization (if applicable):	ADVANCED CHEM.ENG. AND NANOTECHNOLOGY				
Profile:	academic				
Level and form of studies:	2 level, full-time				
Kind of subject:	obligatory				
Subject code	ICC024032				
Group of courses	NO				
	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)					15
Number of hours of total student workload (CNPS)					30
Form of crediting					crediting with grade
For group of courses mark (X) final course					
Number of ECTS points					1
including number of ECTS points for practical (P) classes					
including number of ECTS points for direct teacher-student contact (BK) classes					0,5
<b>PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES</b>					
1. Basics of Chemical Engineering					
<b>SUBJECT OBJECTIVES</b>					
C1 Acquaint students with the latest trends in chemical engineering, bioprocess engineering, nanoengineering.					
C2 Familiarize students with the offered topics of research in chemical engineering.					
<b>SUBJECT LEARNING OUTCOMES</b>					
<b>relating to knowledge:</b>					
PEK_W01 know the trends in chemical engineering					
PEK_W02 knows the modern industrial processes based on nanotechnology					
PEK_W03 knows the modern bioprocesses					
<b>relating to skills:</b>					
PEK_U01 can applied given processes in the technologies of chemical, food and pharmaceutical industries					
<b>relating to social competences:</b>					
PEK_K01 can work in the group projects					
<b>PROGRAM CONTENT</b>					
	<b>Seminar</b>				<b>Number of hours</b>
Sem1	Heat transfer improvement				1
Sem2	Application of supercritical and near-critical fluids				1
Sem3	Microwaves application				1
Sem4	Membrane separation				1

Sem5	Membrane reactors	1
Sem6	Hydrogels	1
Sem7	One- and multi-catalyst immobilization	1
Sem8	Bioreactors in chemicals production	1
Sem9	Beer production controlling	1
Sem10	Heavy metals removing	1
Sem11	Effects of the presence of nanoparticles on dispersed systems	1
Sem12	Biopolymer based drug delivery systems	1
Sem13	Micro/Nanofluidics & Lab-on-a-Chip	1
Sem14	New nanoporous materials	1
Sem15	Computer simulations of adsorption in nanoporous materials	1
	<b>Total hours</b>	<b>15</b>
<b>TEACHING TOOLS USED</b>		
N1. Multimedia presentations N2. Discussion N3. Consultations		
<b>EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT</b>		
<b>Evaluation</b> (F – forming (during semester), P – concluding (at semester end))	Learning outcomes number	Way of evaluating learning outcomes achievement
F1	PEK_W01 - W03	Class attendance and discussion
F2	PEK_U01	Class attendance and discussion
F3	PEK_K01	Class attendance and discussion
<b>PRIMARY AND SECONDARY LITERATURE</b>		
<b><u>PRIMARY LITERATURE:</u></b> A.K.Haghi - Modern Trends in Chemistry and Chemical Engineering J.M.P.Q. - Current Trends in Chemical Engineering		
<b><u>SECONDARY LITERATURE:</u></b> Journals eg. <i>Trends in Chemical Engineering</i> ; <i>Current Trends in Chemical Engineering and Process Technology</i>		
<b>SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)</b>		
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