COURSE DESCRIPTION

1.0			2 Course code				
3. Validity of course description: 2016/2017							
4. Level of studies: MSc programme							
5. Mode of studies: intramural studies							
6. Fi	6 Field of study: CHEMICAL TECHNOLOGY						
7. P	rofile of studies: academic (general)						
8. P	8. Programme:						
9. Semester: II							
10. Faculty teaching the course: FACULTY OF CHEMISTRY, RCH1							
11. (Course instructor: Krzysztogf Mitko PhD						
12. (Course classification: common						
13. (Course status: compulsory						
14. I	anguage of instruction: English						
15. F	Pre-requisite qualifications: processes in chemical te	chnology, chemical engine	eering				
16. (Course objectives:		-				
To introduce students with issues related with environmental protection and to provide them with language skills.							
17. Description of learning outcomes:							
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code			
1.	has the knowledge of the latest chemical and materials technologies, knows the current trends in the development of chemical industrial processes	Test	Lecture	K_W06+++			
2.	has the knowledge of the environmental problems associated with industrial chemical processes	Test	Lecture	K_W09+++			
3.	has the ability to present research findings in a report, dissertation or presentation	Test	Lecture	K_U06+++			
4.	can suitably use natural resources in the chemical industry appropriately, guided by the principles of environmental protection and sustainable development	Test	Lecture	K_U12+++			
5.	has the ability to use the knowledge acquired in the specialty in professional activities	Test	Lecture	K_U20+++			
18. T	eaching modes and hours						
Lecture / BA /MA Seminar / Class / Project / Laboratory							
Lecture: 30 h							
Lecule.							
Legal namework of environmental protection in Poland and EU. Fundamentals of environmental protection. Circulation of substances							
Pagia methoda of proventing contaminants in industry. Air emissions, westewater treatment waste menormental protection.							
Basi	ic methods of preventing contaminants in industry.	Air emissions, wastewa	ter treatment, waste management.	i ne greenhouse			

effect. Reduction of CO_2 emissions. Renewable energy sources. Clean coal technologies.

20. Examination:

21. Primary sources:

Ullmann's Encyclopedia of Industrial Chemistry, Wiley and Sons, 1995. Mournighan, R., Dudzinska, M.R., Barich, J., Gonzalez, M.A., Black, R.K., *Chemistry for the Protection of the Environment*, Springer, 2005. Mazaahir Kidwai and Neeraj Kumar Mishra, *Green Chemistry - Environmentally Benign Approaches*, Publisher: InTech, 2012.

22. Secondary sources:

Claus Christ, Production-Integrated Environmental Protection and Waste Management in the Chemical Industry, Wiley and Sons, 2011

Presentations provided by the instructor

23. Tota	al workload required to achieve learning outo	comes	
Lp.	Teaching mode :	Contact hours / Student workload hours	
1	Lecture	30/30	
2	Classes	1	
3	Laboratory	1	
4	Project	1	
5	BA/ MA Seminar	1	
6	Other	1	
	Total number of hours	30/30	
24. Tota	al hours:60		
25. Nun	nber of ECTS credits: 2		
26. Nun	nber of ECTS credits allocated for contact he	ours: 1	
27. Nun	nber of ECTS credits allocated for in-practice	e hours (laboratory classes, projects):	
26. Con	nments:		

Approved:

(date, Instructor's signature)

(date , the Director of the Faculty Unit signature)