

(faculty stamp)

COURSE DESCRIPTION

Z1-PU7

WYDANIE N1

Strona 1 z 2

1. Course title: Selected topics in chemistry and chemical technology		2. Course code		
3. Validity of course description: 2019/2020				
4. Level of studies: MSc programme				
5. Mode of studies: intramural studies				
6. Field of study: CHEMICAL TECHNOLOGY		RCH-5		
7. Profile of studies: general academic				
8. Programme: general				
9. Semester: 3				
10. Faculty teaching the course: Department of Chemical Organic Technology and Petrochemistry				
11. Course instructor: dr hab. inż Tomasz Krawczyk				
12. Course classification:				
13. Course status: compulsory /elective				
14. Language of instruction: English				
15. Pre-requisite qualifications: general chemistry, physics, English language				
16. Course objectives: Familiarize with subjects of high current societal and economical impact				
17. Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
1.	has expanded and in-depth knowledge in chemistry and other related areas of science, allowing to formulate and solve complex tasks related to chemical technology	Written test	Lecture	K_W03 +
2.	has knowledge of complex chemical processes, including the appropriate selection of materials, raw materials, apparatus and equipment for carrying out chemical processes and characterizing the products obtained	Written test	Lecture	K_W04+
3.	has knowledge of the latest chemical and material technologies, including advanced materials and nanomaterials technologies, knows current trends in the development of chemical industrial processes	Written test	Lecture	K_W07+
4.	can use a foreign language	Written test	Lecture	K_U03+++
5.	has the ability to communicate with specialists and non-specialists in the field of chemical technology and related fields	Written test	Lecture	K_U04++
6.	is aware of the need for lifelong learning and professional development	Written test	Lecture	KK_01 +
18. Teaching modes and hours				
Lecture / BA /MA Seminar / Class / Project / Laboratory				
Sem III - 15 h				
19. Syllabus description:				
Semester III :				
The program covers the following topics:				
- Natural and anthropogenic causes of climate change, natural cycles				
- Fossil fuels, applications, transport, side effects of mass use				
- Alternative energy sources				
- The use of membrane technologies in water and wastewater treatment				
- Separation of gas mixtures (polymer, inorganic, composite membranes).				

- The use of membranes in industry, environmental protection and energy
- Characteristics of organic-inorganic hybrid membranes and their applications

20. Examination: semester ...

21. Primary sources:

1. David J. C. MacKay, Sustainable Energy — without the hot air (2009), Uit Cambridge Ltd, Cambridge, United Kingdom
2. H. Strathmann, Introduction to Membrane Science and Technology, Wiley-VCH, 2011
3. R.W. Baker, Membrane Technology and Applications (third edition), J. Wiley and Sons Ltd., Chichester 2012

22. Secondary sources:

1. Oscillations of the baseline of solar magnetic field and solar irradiance on a millennial timescale, V. V. Zharkova, S. J. Shepherd, S. I. Zharkov & E. Popova, Scientific Reports volume 9, Article number: 9197 (2019)
2. M. Mulder, Basic Principles of Membrane Technology, Kluwer Academic Publisher 1991
3. M. Bodzek, J. Bohdziewicz, K. Konieczny, Techniki membranowe w ochronie środowiska, Wydawnictwo Politechniki Śląskiej, Gliwice 1997
4. A. Narębska (red.): Membrany i membranowe techniki rozdziału. Wydawnictwo Uniwersytetu Mikołaja Kopernika, Toruń 1997.

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	15/15
2	Classes	/
3	Laboratory	/
4	Project	/
5	BA/ MA Seminar	/
6	Other	/
	Total number of hours	15/15

24. Total hours:30

25. Number of ECTS credits: 1

26. Number of ECTS credits allocated for contact hours: 0,5

27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects):0

26. Comments:

Approved:

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(date, Instructor's signature)

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(date, the Director of the Faculty Unit signature)