

Course title Wykład monograficzny - Technologie zaawansowanego utleniania/Monographic lecture - Advanced oxidation processes		ECTS code 13.3.0424	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemistry	Master	Full-time studies	
Teaching staff Prof. dr hab. Ewa Siedlecka			
Forms of classes, the realization and number of hours		ECTS credits classes 30 h tutorial classes 10 h student's own work 35 h Total: 75 h - 3 ECTS	
A. Forms of classes, in accordance with the UG Rector's regulations Lecture			
B. The realization of activities In-class learning			
Number of hours lecture 30 h			
The academic cycle 2019/2020 winter semester			
Type of course obligatory		Language of instruction Polish	
Teaching methods Lectures including multimodal presentations Problem lecture		Form and method of assessment and basic criteria for evaluation or examination requirements	
		A. Final evaluation, in accordance with the UG study regulations Course completion (with a grade)	
		B. Assessment methods Oral assesment	
		C. The basic criteria for evaluation or exam requirements • Positive assessment of oral credit according to criteria in accordance with the University of Gdansk Studies Regulations	
Required courses and introductory requirements a. Formal requirements none b. Prerequisites General and organic chemistry			
Aims of education -To familiarize students with the mechanisms of degradation of pollutants in selected advenced oxidation processes • To familiarize students with the selected devices used for the treatment of liquid and gas streams by AOP			

Course contents

A. Lecture topics:

Characterization and classification of advanced oxidation processes (AOP). The mechanism of oxidation of pollutants in the method of wet air oxidation and supercritical oxidation. Characteristics of chemical, photochemical and electrochemical processes for removing impurities from water, soil and air. Production and application of modern materials with catalytic properties in AOP methods. Application of nanostructures in AOP methods. The use of ozonation for disinfection, removal of organic compounds from the water phase and for deodorization of air streams.

Bibliography of literature

A. Literature required to pass the course

A. Literatura wymagana do ostatecznego zaliczenia zajęć (zdania egzaminu):

A.1. wykorzystywana podczas zajęć

1. Barbusiński, Zaawansowane utlenianie ścieków przemysłowych, Politechnika Śląska, 2013r.
2. Burczyk B. Zielona Chemia, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2006
3. Lewandowski W.M. Proekologiczne źródła energii odnawialnej, WNT W-wa 2001
4. Zarzycki R., Zaawansowane metody utleniania, Politechnika Wrocławska, Wrocław 2002.

A.2. studiowana samodzielnie przez studenta

Materials prepared by the teacher

B. Extracurricular readings

Knowledge

1. Student lists and defines the concepts of advanced oxidation processes (AOP), wet oxidation, supercritical oxidation, etc.
2. Student classifies AOP methods
4. Student explains and understands the mechanism of degradation in various AOP methods
5. Student lists and discusses new materials with catalytic properties
6. Student understands and explains the catalysis process
7. Student lists and characterizes the basic devices used for cleaning liquid and gas streams using AOP
8. Student lists examples of the use of AOP methods in the chemical, food and environmental industries

Social competence

1. Student understands the need for further education
2. Student is aware of the threats arising from environmental degradation and the need for changes in technology.