



UNIWERSYTET GDAŃSKI

Course title Technologie przetwarzania odpadów/ Waste Conversion Technologies		ECTS code 13.3.1156	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemistry	bachelor's degree	Full-time studies	
Teaching staff dr inż. Anna Gołąbiewska, dr inż. Anna Malankowska, dr inż. Joanna Nadolna, dr inż. Aleksandra Pieczyńska			
Forms of classes, the realization and number of hours		ECTS credits 2	
A. Forms of classes, in accordance with the UG Rector's regulations lecture		classes - 30 h tutorial classes – 5 h student's work – 15 h	
B. The realization of activities in-class learning		Total: 50 h - 2 ECTS	
C. Number of hours 30 h lecture			
The academic cycle 2020/21 winter semester			
Type of course elective		Language of instruction Polish	
Teaching methods Lecture with the multimedia presentation Case study 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 test	
		C. The basic criteria for evaluation or exam requirements • positive assessment of the written test consisting of test and open questions covering the issues listed in the program content of the lecture; grade criteria in accordance with the UG Studies Regulations	
Required courses and introductory requirements Basics of general chemistry			
Aims of education To acquaint students with waste processing technologies.			
Course contents Definition and classification of waste. Types of methods and technologies of waste treatment: physicochemical, biological, and thermal. Basic processes, operations, and devices. Municipal waste - characteristics and technological properties. Industrial waste management. Mineral waste materials and technologies for their management. Energy waste. Technologies for the creation and use of fuels from waste. Thermal waste utilization. Characteristics, technologies, and handling of hazardous waste. Organic waste. Raw materials for biological processing. Technologies and products of waste fermentation. Waste composting technologies. Mechanical-biological waste treatment. Recycling technologies - material, raw material, and energy recycling. Methods of recovery and use of secondary raw materials. Recovery and recycling of polymeric materials. Methods of asbestos waste utilization. Storage of waste. Waste avoidance options. Low-waste and non-waste technologies. Rational management of raw materials and waste. Economic and environmental aspects of waste management.			
Bibliography of literature			
A. Literature required to pass the course			
- Rosik-Dulewska C., Podstawy gospodarki odpadami, PWN, Warszawa 2015			
- Kasprzycka-Guttman T. (red.), Odpady stałe, ciekłe i gazowe – zapobieganie, powstawanie, utylizacja, OW Forest, Warszawa 2009			
- Jędrzak A., Biologiczne przetwarzanie odpadów, PWN, Warszawa 2007			

- Bilitewski B., Hardtle G., Marek K., Podręcznik gospodarki odpadami, Wydawnictwo Seidel Przywecki, Warszawa 2006

B. Extracurricular readings

-Wolny T. (red.pl) Sprawdzone metody gospodarowania odpadami komunalnymi, Stowarzyszenie Technologii Ekologicznych SILESIA, Opole 2010

-Wardasz A.J., Paliwa z odpadów. Technologie tworzenia i wykorzystania paliw z odpadów, PZLiTS, Poznań 2011
Kijeński J., Łędzki A.K., Jeziórska R., Odzysk i recykling materiałów polimerowych

Knowledge

Student:

1. lists and defines the concepts of waste management.
2. lists and describes the processes used in the processing, use, and disposal of waste
3. describes the construction and operating principles of installations for physicochemical, biological, and thermal waste treatment
4. discusses the impact of waste production and processing technologies on the natural environment

Skills

Student:

- choose a management method for selected types of municipal and industrial waste,
- describes the environmental impact of selected waste treatment installations
- evaluate the effectiveness of the processes used in waste management;

Social competence

Student:

- is aware of the negative impact of waste on the environment.
- follows the safety rules in force in the chemical laboratory.
- collaborates in a team during laboratory tests and processing of results.
- links the importance of the development of waste management technologies for the good condition of the natural environment and human health;