


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
 EUROPEJSKI
 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Diploma lecture - Waste conversion technologies		13.3.1156	
Name of unit administrating study			
null			
Studies			
faculty	field of study	type	pierwszego stopnia
Wydział Chemii	Chemia	form	stacjonarne
		specjalty	chemia biomedyczna, chemia kosmetyków, analityka i diagnostyka chemiczna, chemia żywności
		specialization	wszystkie
Teaching staff			
dr inż. Anna Gołębiewska; dr inż. Anna Malankowska; dr inż. Joanna Nadolna; dr inż. Aleksandra Pieczyńska			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		2	
Lecture		classes - 30 h	
The realization of activities		tutorial classes – 5 h	
classroom instruction		student's work – 15 h	
Number of hours		Total: 50 h - 2 ECTS	
Lecture: 30 hours			
The academic cycle			
2024/2025 summer semester			
Type of course		Language of instruction	
obligatory		polish	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
multimedia-based lecture		Final evaluation	
		Graded credit	
		Assessment methods	
		The basic criteria for evaluation	
		<ul style="list-style-type: none"> 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 	
Method of verifying required learning outcomes			
Required courses and introductory requirements			
A. Formal requirements			
none			
B. Prerequisites			
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

Bibliography of literature

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

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

Kijeleński J., Łędzki A.K., Jeziórska R., Odzysk i recykling materiałów polimerowych

The learning outcomes (for the field of study and specialization)

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

Contact

anna.golabiewska@ug.edu.pl