



Subject card

Subject name and code	, PG_00059937						
Field of study	Environmental Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies	Subject group			Optional subject group		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Environmental Engineering Technology -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Krzysztof Czerwionka					
	Teachers	dr hab. inż. Krzysztof Czerwionka dr inż. Karolina Fitobór mgr inż. Anna Wilińska-Lisowska					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours		Self-study		SUM
	Number of study hours	30	5.0		20.0		55
Subject objectives	Detailed overview of issues related to the sustainable municipal waste management and effective implementation of the circular economy idea in cities						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W11] has knowledge to analyze, evaluate and optimize processes, objects and systems of environmental engineering and knows the principles of rational energy management and resources	The student has the knowledge to select waste management solutions based on the analysis of waste parameters, taking into account the legal aspect			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
	K7_U12	The student is able to assess the correct functioning of selective waste collection systems			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task		
	K7_U11	The student is able to assess the impact of waste collection systems on other aspects of environmental impact, including in terms of the circular economy			[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
Subject contents	Lecture: Comparison of waste management models. Selected issues related to municipal waste management in communes. Presentation of legal and economic aspects of the waste management in Poland (including segregation system). Management of individual fractions of municipal waste (such as biowaste, household hazardous waste, residual waste). Technical excursions (site visits) are an element that supports the cognitive process.						
	Exercises: Characterisation of municipal waste - analysis of waste composition and morphology. Analysis of the water extract made from municipal waste. Methane digestion of selected municipal waste						
Prerequisites and co-requisites	participation in classes on the subject "Waste and sewage sludge management" in engineering studies (first degree)						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Passing test	60.0%	60.0%
	Passing the exercises	60.0%	40.0%
Recommended reading	Basic literature	<p>1) Wojciech Hryb, Karolina Cęglarz: Odpady komunalne w aspekcie gospodarki o obiegu zamkniętym. Wydawnictwo Politechniki Śląskiej, Gliwice 2021.</p> <p>2) Kajetan d'Obryn, Ewa Szalińska: Odpady komunalne : zbiórka, recykling, unieszkodliwianie odpadów komunalnych i komunalnopodobnych : podręcznik dla studentów wyższych szkół technicznych. Wydawnictwo Politechniki Krakowskiej, Kraków 2005.</p> <p>3) Agnieszka Generowicz: Ocena możliwości realizacji gospodarki cyrkulacyjnej w systemach gospodarki odpadami komunalnymi - wybrane zagadnienia. Wydawnictwo Politechniki Krakowskiej, Kraków 2021.</p> <p>4) Justyna Pyssa: Odpady przemysłowe i niebezpieczne w gospodarce obiegu zamkniętego. Wydawnictwo AGH, Kraków 2019.</p>	
	Supplementary literature	<p>1) ustawa z dnia 14 grudnia 2012 r. o odpadach [Dz. U. z 2022 r. poz. 699, 1250, 1726, 2127, 2722]</p> <p>2) ustawa z dnia 13 września 1996 r. o utrzymaniu czystości i porządku w gminach [Dz. U. z 2022 r. poz. 2519]</p>	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed	Present the full characteristics of the selected fraction of municipal waste along with possible ways of its management consistent with the idea of a circular economy.		
Work placement	Not applicable		