GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Landfills, PG_00048030		
Field of study	Environmental Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Geotechnics, Geology and Marine Civil Engineering -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marzena Wójcik	
	Teachers	dr inż. Marzena Wójcik	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	10.0	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	55.0	90

Subject objectives	The course broadens students understanding of basic regulations concerning on the landfills, its locations, waste volume and earthwork calculations. Student become acquainted with geosynthetics used on landfills and rules for calculating their strength, construction stability. The course enable student to design the seal of the construction, leaking proteprotection , and system for leachate drainage.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W05] has basic knowledge in general construction or in water or sanitary or hydrotechnical or road construction; the impact of construction investments on the environment	The course broadens students understanding of environmental impacts of landfillds	
[K7_U03] can elaborate detailed documentation presenting results of an experiment, design or research task; can prepare a paper to discuss the results	The course enable student to design the seal of the construction, leaking protection , and system for leachate drainage and present its results..	
[K7_U07] can plan and carry out laboratory and field experiments leading to assessment of the efficiency of water treatment, waste water treatment, waste management and sewage sludge management	Students have knowledge of waste and leachate management	
[K7_W07] has an in-depth, structured and theoretical knowledge of municipal management, including water treatment and water renewal technologies, various types of wastewater treatment technologies, including landfill leachate, sewage sludge treatment technologies; knowledge of natural methods used in water and wastewater treatment or construction, functioning, operation and closure of waste landfills	Students have knowledge of waste management, rules of the landfills construction, exploitation and closing and leachate management.	

Subject contents

The course broadens students understanding of basic regulations concerning on the landfills, its locations, waste volume and earthwork calculations. Student become acquainted with geosynthetics used on landfills and rules for calculating their strength, construction stability accrding to EC7. The course enable student to design the seal of the construction, leaking protection , system for leachate drainage, systems for landfill degassing and monitoring.

Prerequisites and co-requisites

knowledge from hydrogeology and soil mechanic

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
project	60.0%	25.0%
case study	60.0%	25.0%
egzam	60.0%	50.0%

Recommended reading

Basic literature	Council Directive 1999/31/EC of 26 April 1999 on the landfill of wastes. Official Journal L182, 16/07/1999
Supplementary literature	Sharma H.D., Reddy K.R. Geoenvironmental Engineering, John Wiley and Son (2004), EC7 „GEOTECHNICAL DESIGN”
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Type of landfills; basic regulations concerning on the landfills, its locations, waste volume and earthwork calculations. geosynthetics used on landfills and rules for calculating their strength. Design the seal of the construction, leaking protection , and system for leachate drainage; systems for landfill degassing and monitoring.

Work placement

Not applicable