

## COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Science									
Field of study								Degree level and programme type	
Specialization/ diploma path								Study profile	Academic profile
Course name	Waste management							Course code	IS-FCEE-00037-1S
								Course type	Erasmus
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	15			15				No. of ECTS credits	4
Entry requirements	Basic knowledge of chemistry and systems of wastewater treatment as well as geodesy, soil mechanics and geotechnics, land improvement, engineering graphics								
Course objectives	Practical skills of choosing right waste disposal system, knowledge of possibility of its practical use, skills of assessment threats and prevention for each disposal system, competence in decision making in field of waste disposal. Practical outcome is engineering design of landfill/composting plant for chosen administrative unit.								
Course content	Characteristics of waste quantity and quality. Methods of waste analyses and classification. Monitoring of waste management system. Methods and technology of waste disposal. Project: Design of waste management program for chosen administrative unit / project of landfill plant for chosen administrative unit.								
Teaching methods	case study analysis, discussion, technical calculations, project presentation								
Assessment method	Final project preparation, correctness of partial calculations for the project, written test								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
L01	Knowledge of rules and guidelines of waste management including remediation and reclamation of waste-degraded areas							IS1_W08 IS1_W11	
L02	Knowledge of advantages and disadvantages of landfilling, composting and waste incineration							IS1_W07 IS1_W08	
L03	Skills to describe and chose the right method and technology of waste disposal, knowledge of landfill project principles, ability to use computer tools for project preparation and presentation							IS1_W10 IS1_U10	
L04	Skills to design a simple landfill plant for chosen administrative unit with systems of leachate and biogas drainage							IS1_W08 IS1_U12	
L05	Can use the different kinds of information related to waste management							IS1_U14	
L06	Can objectively assess, use and analyze the information concerning waste management							IS1_U04	

Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
L01	written test	L	
L02	written test	L	
L03	project specification, project discussion	P	
L04	project specification, calculation correctness in project documentation, project specification	P	
L05	project specification, project discussion, observation of work during project	P	
L06	calculation correctness in project documentation, project specification, presentation of project	P	
<b>Student workload (in hours)</b>		<b>No. of hours</b>	
<b>Calculation</b>	participation in project/lectures	30	
	preparation for projects, preparation of calculations	45	
	project realization	20	
	preparation for partial credit calculations and participation on it	5+5	
	participation in student-teacher sessions related to the project	5	
	project presentation	5	
	<b>TOTAL:</b>	115	
<b>Quantitative indicators</b>		<b>HOURS</b>	<b>No. of ECTS credits</b>
<b>Student workload – activities that require direct teacher participation</b>		45	2
<b>Student workload – practical activities</b>		100	4
<b>Basic references</b>	Burnley S. Solid wastes management. John Wiley & Sons 2014 Bogchi A. Design of Landfills and Integrated Solid Waste Management. John Willey and Son, New York 2004 Aziz H.A., Amr S.A. Control and Treatment of Landfill Leachate for Sanitary Waste Disposal, IGI Global 2014 McBean E.A., Rovers F.A., Farguhar G.J. Solid Waste Landfill Engineering and Design. New Jersey 1995		
<b>Supplementary references</b>	Tałalaj I.A., Gospodarowanie odpadami. Wybrane zagadnienia. Białystok 2008 Carville M., Robinson H. Leachate treatment. Waste Management World. United Kingdom 2005 Pichtel J. Waste management practises. CRC Press 2005		
<b>Organisational unit conducting the course</b>	<b>Department of Water Supply and Sewage Systems</b>	<b>Date of issuing the programme</b>	
<b>Author of the programme</b>	<b>Assoc. Prof. Izabela Anna Tałalaj, DSc, PhD, Eng.</b>	<b>29th November 2019</b>	

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar