

## COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences									
Field of study								Degree level and programme type	1 <sup>st</sup> cycle
Specialization/ diploma path								Study profile	academic profile
Course name	Sewerage Systems							Course code	IS-FCEE-00261W
								Course type	Erasmus
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter
	15			30	15			No. of ECTS credits	5
Entry requirements	Basic knowledge of fluid mechanics								
Course objectives	By the end of this module students should be able to: characterize different types of wastewater collection systems and their components, calculate sewage budget for a community, apply appropriate methods for a design of sewers, design simple wastewater collection system.								
Course content	<p><u>Lectures</u>: General information on sewerage systems. Computation of sewage flows. Design principles of separated and combined sewage systems. Operation and design principles of pressure and vacuum sewage systems. Hydraulic calculations of sewers. Pipe materials and sewerage appurtenances.</p> <p><u>Project</u>: Engineering design of gravity sewer system for a small community (foul water only)</p> <p><u>Specialized workshop</u> – application of professional computer software for hydraulic analysis of sewer system</p>								
Teaching methods	Informational lectures (with multimedia presentations), design project (with example calculations), exercises with computers								
Assessment method	lecture – written test; project / specialized workshop – project / exercises completion, presentation and discussion								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
	<i>(Knowledge) Student knows and understands:</i>								
LO1	detailed knowledge of the simulation and design of sewer networks in accordance with applicable standards							IS1_W07	
LO2	theoretical basics of design, construction and operation of sewerage systems, including design guidelines and standards							IS1_W11	
	<i>(Skills) Student is able to:</i>								
LO3	apply interdisciplinary knowledge to analyse and solve complex problems of sewerage systems							IS1_U01	

LO4	apply design principles and available computer software to solve engineering problems related to sewerage systems	IS1_U06	
LO5	design sewer network according to local requirements, design guidelines and technical standards, selecting appropriate technologies, materials and tools	IS1_U07	
	<i>(Social competencies) Student is ready to</i>		
LO6	perform his professional role responsibly and to comply with the principles of professional ethics	IS1_K01	
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
LO1	written exam, project and exercises completion	L, P, SW	
LO2	written exam, project completion	L, P	
LO3	project and exercises completion	P, SW	
LO4	project and exercises completion	P, SW	
LO5	written exam, project and exercises completion	L, P, SW	
LO6	written exam, project and exercises completion	L, P, SW	
Student workload (in hours)		No. of hours	
Calculation	lecture attendance	15	
	participation in classes, laboratory classes, etc.	45	
	working on projects, reports, etc.	55,5	
	participation in student-teacher sessions related to the classes/seminar/project	4,5	
	TOTAL:	125	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		65	2,6
Student workload – practical activities		102	4,1
Basic references	1) Metcalf & Eddy. Wastewater Engineering: Treatment, Disposal and Reuse, 3d ed., McGraw-Hill, New York, 1991. 2) Viessman Jr.W.,Hammer M.J.: Water Supply and Pollution Control. Harper and Row Publishers Inc., 1996. 3) Kalenik M.: Water Supply and Sewage Disposal (in Polish). Wyd. SGGW, Warszawa, 2009		
Supplementary references	1. Butler, D., Davies J.W.: Urban Drainage, 2nd edition, Spon Press, London And New York, 2000, available online: <a href="https://vannpiseth.files.wordpress.com/2015/07/urban-drainage-butler.pdf">https://vannpiseth.files.wordpress.com/2015/07/urban-drainage-butler.pdf</a> . 2) Heidrich Z.: Sewer Systems - textbook for technical schools (in Polish). Wyd.Szkolne i Pedagogiczne, Warszawa, 2006.		
Organisational unit conducting the course	Department of Water Supply, Sewerage and District Heating	Date of issuing the programme	
Author of the programme	Dariusz Andraka, PhD, Eng.; prof. Izabela Bartkowska, PhD, Eng.	2026.03.10	

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