

## COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences									
Field of study								Degree level and programme type	
Specialization/ diploma path								Study profile	academic profile
Course name	Basics of Sewerage Systems							Course code	IS-FCEE-00261S
								Course type	Erasmus
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	15			30	15			No. of ECTS credits	4
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 sewage disposal 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)								
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	
LO1	Student is able to: explain how sewage disposal systems work and describe main elements of the system							IS1_W05	
LO2	Student is able to design a gravity sewer system							IS1_U11	
LO3	Student is able to access and apply data necessary for a design and analysis of sewer systems							IS1_U14	
LO4	Student is ready to analyse problems related to sewage disposal							IS1_K01	

LO5		
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	written exam	L
LO2	evaluation of submitted project and exercises from the workshop	P, SW
LO3	evaluation of submitted project / exercises	P, SW
LO4	discussion of submitted project	P
LO5		
Student workload (in hours)		No. of hours
Calculation	lecture attendance	15
	participation in classes, laboratory classes, etc.	45
	working on projects, reports, etc.	15
	participation in student-teacher sessions related to the classes/seminar/project	3
	preparation for and participation in exam	10
	TOTAL:	98
Quantitative indicators		HOURS      No. of ECTS credits
Student workload – activities that require direct teacher participation		63      2,5
Student workload – practical activities		60      2,4
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 and Sewage Systems	Date of issuing the programme
Author of the programme	Dariusz Andraka, PhD	2022.01.12

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