

COURSE DESCRIPTION CARD

Faculty of Civil and Environmental Science										
Field of study								Degree level and programme type		
Specialization/ diploma path								Study profile	Academic profile	
Course name	Water and wastewater technology I							Course code	IS-FCEE-00041W	
								Course type	Erasmus	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter	
	30	15	30					No. of ECTS credits	6	
Entry requirements	Chemistry									
Course objectives	<p>General characteristics of water taken for municipal purposes. municipal purposes, their quantity and quality. Presentation of mechanical, physicochemical, biological and chemical methods of water treatment. Biological and chemical methods of water purification. Phenomena occurring during particular processes of water treatment processes. Optimal choice of a process and treatment system depending on type, quality and destination of water. Preparation to scientific research in the field of water treatment.</p>									
Course content	<p>Lecture: Removal of dissolved substances and suspended solids from water. Methods, technological parameters and efficiency of surface, infiltration and ground water treatment,. Examples of technological systems and lines of water treatment plants urban and domestic purposes.</p> <p>Exercises: water types, operation characteristics, water parameters, and application of particular methods and unit processes for urban water treatment. Calculation tasks.</p> <p>Laboratory: quality assessment of individual water treatment processes, proper technology depending on the type of water to be purified, its quality demand and purpose of use. Methods, technological parameters and efficiency water purification for urban and domestic purposes.</p>									
Teaching methods	Lecture – presentation, discussion with students, case study explanation, classes – calculation tasks, laboratory classes – laboratory tests									
Assessment method	Lecture – final exam, classes- calculation tasks, laboratory classes – laboratory activities confirmation, tests									
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study		
LO1	Student has knowledge to an advanced degree in the field of							IS1_W07 IS1_W06		

	basic methods of physico-chemical analyses, processes and phenomena occurring in water and the latest methods of water treatment	
L02	Student knows in an advanced degree - issues from mathematics, physics, chemistry, biology, which are the basis of processes in environmental engineering. The student is able to use scientific, popular and branch literature, norms, legal acts, internet databases. The student is able to use the acquired information appropriately, draws conclusions, formulates and presents opinions, discuss them	IS1_W02
L03	The student is able to properly plan and perform physicochemical research of water using specialized scientific and research apparatus, interpret the results and draw adequate conclusions on this basis conclusions,	IS1_U02
L04	Students is able to analyse and evaluate technical, technological and organisational solutions concerning of arising pollution, is able to act in a creative and entrepreneurial way cooperate in a group, taking various roles in it.	IS1_U08
L05	The student is ready to analyze the content obtained from sources and to critically evaluate the possibility of use them in professional work	IS1_K01
L06		
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
L01	Exam	L
L02	Exam, calculation tasks, laboratory classes tests	L, C, LC
L03	Exam, calculation tasks,	L,C
L04	Exam, calculation tasks, laboratory classes tests	L, C, LC
L05	Exam, calculation tasks,	L,C
L06		
Student workload (in hours)		No. of hours
Calculation	Attendance at lectures	15
	Attendance at laboratory classes	30
	Attendance at classes	15
	Preparation for exam	10
	Preparation for classes and laboratory classes	15
	Preparation for every type of classes assessment	30
	Writing reports from laboratory classes	5
	Consultations with the teacher	5
TOTAL:		125
Quantitative indicators		HOURS No. of ECTS credits

Student workload – activities that require direct teacher participation		67	2.5
Student workload – practical activities		102	4
Basic references	<ol style="list-style-type: none"> 1. Binnie C., Kimber M., Smethurst G. (2002) Basic Water Treatment, Londyn Thomas Telford Ltd. 2. Carter M.R., Gregorich E.G. Soil sampling and methods of analysis, II edition, Taylor & Francis Publ. NW 2008 3. Cheremisinoff P. (2002). Handbook of Water and Wastewater Treatment Technologies. Butterworth-Heinemann. 		
Supplementary references	<ol style="list-style-type: none"> 1. Beverly P (2005). Filter Troubleshooting and Design Handbook. American Water Works Association 2. Crittenden J.C., Rhodes Trussell R., Hand D.W., Howe K.J., Tchobanoglous G. (2005) Water treatment: Principles and design, 2nd edition, John Wiley & Sons, Inc. 3. Frayne C. (2011) The metro handbook of water treatment for HVAC systems, The metro group. Servicing water systems with environmental care, NY USA 		
Organisational unit conducting the course	Department of Technology in Environmental Engineering	Date of issuing the programme	
Author of the programme	Professor Iwona Skoczko	2021.03.15	

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

S – seminar