

COURSE DESCRIPTION CARD

Faculty of Civil Engineering and Environmental Sciences									
Field of study	Environmental Engineering						Degree level and programme type	Bachelor of Science	
Specialization/ diploma path	Common course						Study profile	Practical	
Course name	Facilities for waste-water treatment						Course code	19284207H	
							Course type	Obligatory	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	6
	16			32				No. of ECTS credits	4
Entry requirements	Sanitary chemistry, Biology, Fluid mechanics, Material science, waste-water technology								
Course objectives	Introduction to basic methods, devices and technological parameters and their effectiveness in wastewater treatment. Presentation of types, principles of operation and exploitation as well as parameters of devices. Introduction of technology and devices selection principles depending on wastewater type, its quality and origin sources. Introduction of principles of design and selection of equipment for mechanical, physical, chemical and biological wastewater treatment.								
Course content	Basic technological and equipment systems of wastewater treatment plants, devices for mechanical, physical, chemical and biological wastewater treatment; screens, grinders, skimmers, sand traps, primary and secondary settling tanks, biological beds, activated sludge chambers, biological ponds. Equipment for anaerobic wastewater treatment, wastewater disinfection. Equipment for sewage sludge treatment: thickeners, digesters, composting, incinerators, sludge stabilization								
Teaching methods	Lecture - presentation of programme contents with the use of multimedia assisted learning techniques Project- carry out the necessary calculations for the selection and dimensioning of wastewater treatment equipment using applicable standards and calculation rules								
Assessment method	Lecture- written exam, Project- preparation and oral presentation of wastewater treatment plant design								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	A graduate knows and understands at an advanced level - the latest methods of water purification, sewage treatment and waste management							IS1_W08, P6S_WG - P6S_WG	
LO2	A graduate knows and understands at an advanced level - principles of designing technologies and systems in							IS1_W09, P6S_WG - P6S_WG	

	environmental engineering as well as operating and utilizing facilities	
L03	A graduate can design, according to an initial specification, solutions for equipment, systems, facilities in environmental engineering, utilizing appropriately selected methods, technologies, tools and materials	IS1_U12, P6S_UW - P6S_UW
L04	A graduate can consciously and competently design and implement their own innovative technical-technological solutions for equipment, facilities and systems in environmental engineering	IS1_U13, - P6S_UW - P6S_UW
L05	A graduate is ready to formulate and communicate to the public, in a comprehensible way, information related to scientific achievements and technical aspects of an environmental engineer's activity	IS1_K04, P6S_KO
L06		
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
L01	Written exam	L
L02	Written exam, design preparation	L, P
L03	Design preparation	P
L04	Design preparation	P
L05	Oral presentation of prepared design	P
L06		
Student workload (in hours)		No. of hours
Calculation	Participation in lecture classes	1 x 12 = 12h
	Participation in project classes	1 x 36 = 36h
	Preparation to project classes	10 x 1 = 10h
	Preparation of design and its presentation	20 x 1 = 20h
	Preparation and participation to written exam	10 x 1 = 10h
	Participation in consultation classes	1 x 12 = 12h
	TOTAL:	100
Quantitative indicators		HOURS No. of ECTS credits
Student workload – activities that require direct teacher participation		40 2
Student workload – practical activities		80 3
Basic references	<ul style="list-style-type: none"> David L. Russell, Practical Wastewater Treatment, 2nd Edition, Wiley, 2019 Rumana Riffat, Fundamentals of Wastewater Treatment and Engineering, CRC Press, 2013 The American Water Works Association (AWWA), The American Society of Civil Engineers (ASCE), Water Treatment Plant Design, Fifth Edition, The McGraw-Hill Companies, Inc., 2012 	
Supplementary references	<ul style="list-style-type: none"> Frank R. Spellman, Handbook of Water and Wastewater Treatment Plant Operations, CRC Press, 2020 	

	<ul style="list-style-type: none"> • G. L. Karia, R.A. Christian, Wastewater Treatment: Concepts and Design Approach, PHI Learning Pvt. Ltd., 2013 • Nicholas P. Cheremisinoff, Handbook of Water and Wastewater Treatment Technologies, Butterworth-Heinemann, 2002 	
Organisational unit conducting the course	Department of Environmental Engineering Technology	Date of issuing the programme
Author of the programme	Piotr Ofman, PhD. Eng.	09.05.2022

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