COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Faculty of Civil and Environmental Sciences</td></tr>
<tr><td>Field of study</td><td colspan="6"></td><td>Degree level and programme type</td><td></td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="6"></td><td>Study profile</td><td>Academic profile</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="6" rowspan="2">Water management and water protection</td><td>Course code</td><td>IS-FCEE 00134W</td></tr>
<tr><td>Course type</td><td>Erasmus</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>winter</td></tr>
<tr><td>15</td><td></td><td>30</td><td></td><td></td><td></td><td></td><td>No. of ECTS credits</td><td>4</td></tr>
<tr><td>Entry requirements</td><td colspan="9">basic knowledge of sanitary chemistry, hydrology</td></tr>
<tr><td>Course objectives</td><td colspan="9">The aim of the course is to provide students with information on hydrological phenomena and processes used in water management, as well as on the resources and classification of waters and their sources of pollution, and to prepare them for scientific research. Explaining the principles of water protection and water management in Poland. To acquaint the student with the instruments of water management and the effectiveness of their application, as well as with the current Polish law on water management and water protection.</td></tr>
<tr><td>Course content</td><td colspan="9">The lab classes: Location of measurement and control points taking into account field conditions, distribution of industry, sewage treatment plants, principles of taking, recording and preparing environmental samples for analysis, performing field determinations of basic water quality indicators, developing results of chemical analysis, assessment of chemical condition.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">Laboratory classes</td></tr>
<tr><td>Assessment method</td><td colspan="9">ERASMUS students are expected to plan the study of water quality in order to achieve the assumed objectives of the experiments, and then prepare reports with the interpretation of the obtained research results and prepare of given case study</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">student knows and understands to an advanced degree selected phenomena, processes and objects, constituting the basic knowledge of hydrology, land reclamation in environmental engineering, in particular water circulation in nature, water resources, water protection against pollution, as well as self-purification processes.</td><td colspan="2">IS1_W01</td></tr>
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LO2	knows and understands at an advanced level - basic methods of physical and chemical analyses, processes and phenomena occurring in water, assesses the state of water purity	IS1_W07
LO3	knows and understands, to an advanced degree, the general principles of environmental impact assessment, and in particular the assessment of the impact of wastewater on the receiver	IS1_W11
LO4	is able to correctly plan and perform physico-chemical research using specialist scientific and research equipment, interpret its results and on this basis draw appropriate conclusions	IS1_U02
LO5	is able to properly select and use the methods and tools learned, including advanced information, simulation and experimental techniques when solving complex engineering problems	
LO6	is able to use scientific, popular science and industry literature, subject standards, legal acts, Internet databases, properly use the information obtained, as well as draw conclusions and formulate and present opinions	IS1_U14
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	preparation for laboratory classes, report on lab exercises, preparation of materials for case studies, discussions in class	LC
LO2	preparation for laboratory classes, report on lab exercises, preparation of materials for case studies, discussions in class	LC
LO3	preparation for laboratory classes, report on lab exercises, preparation of materials for case studies, discussions in class	LC
LO4	preparation for laboratory classes, report on lab exercises, preparation of materials for case studies, discussions in class	LC
LO5	preparation for laboratory classes, report on lab exercises, preparation of materials for case studies, discussions in class	LC
LO6	preparation for laboratory classes, report on lab exercises, preparation of materials for case studies, discussions in class	LC
Student workload (in hours)		No. of hours
Calculation	Participation in laboratory classes	30
	Participation in consultation	10
	preparation for laboratory exercises, report on laboratory exercises,	30

	preparation of materials for case study	10
	TOTAL:	80

Quantitative indicators	HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation	40	1,5
Student workload – practical activities	40	1,5

Basic references	Manahan, Stanley E. "Frontmatter"Fundamentals of Environmental Chemistry, Boca Raton: CRC Press LLC,2001	
Supplementary references	B Allard Contrib. Water pollution, Berlin : Springer-Verlag, 1991. Vernon L Snoeyink David Jenkins, Water chemistry, New York : Wiley J., 1980.	
Organisational unit conducting the course	Department of Technology in Environmental Engineering	Date of issuing the programme
Author of the programme	Joanna Szczykowska PhD	

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