<table>
<tr><td colspan="2">NAME OF THE COURSE</td><td colspan="5">WATER PROTECTION AND MUNICIPAL WASTEWATER AND RAIN WATER TREATMENT</td></tr>
<tr><td>Code</td><td></td><td>Year of study</td><td colspan="4">2., III. semester</td></tr>
<tr><td>Course teacher</td><td>Jure Margeta, PhD, Full Professor, tenure</td><td>Credits (ECTS)</td><td colspan="4">5.0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td></td><td>15</td><td></td></tr>
<tr><td>Status of the course</td><td>compulsory</td><td>Percentage of application of e-learning</td><td colspan="4">/</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The aim of the course is to educate students how to plan and manage water protection, treatment plants, municipal wastewater and storm water.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">Undergraduate qualification (6th level of EQF or CROQF).</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">The student is expected to be able to describe and explain water protection issues; basic ecological characteristics of water and environment, sources and types of pollution, impact of pollution on water and environment, measures and activities for water and environment protection, the basics of municipal wastewater treatment plant design, as well as planning, control and operation of the plant.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">An introduction to problems of water pollution and protection: Water pollution. Pollution sources. Wastewater characteristics. Pollution load. Wastewater treatment. Control of dispersed sorces of pollution. Water protection plan. Municipal wastewater treatment: General water treatment flowchart. Preliminary treatment. Primary wastewater treatment. Secondary wastewater treatment. Nutrient elimination. Disinfection of treated wastewater. Sludge treatment. Natural treatment systems. Hydraulic aspects of wastewater treatment plants: Main hydraulic parts. Main types of flow. Flow through treatment plant units. Hydraulic dimensioning of treatment plants. Use of pumps in treatment plants. Disposal and reuse of treated wastewater and sludge: Discharge of treated wastewater. Sludge disposal. Treated wastewater and rain water reuse. Environmental impact of treatment plants and impact reduction measures: Main impacts. Treatment plant operation impact. Odour and odour control. Aerosol and VOCs and control. Insects. Noise and other matters. Measure presentation. Treatment plant operation control and problem elimination: Sampling and measurement. Control systems. Basic problem types and causes. Problem elimination methods. Health problems and protection measures. Wastewater treatment plant operation: The essentials. Work organization. Data and reporting. Public relations. Construction and plant costs. Financing. Rain water treatment: Calculation of volume and pollution load of rain water. Rain water treatment processes.</td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☒ field work</td><td colspan="3">☐ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor</td></tr>
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Student responsibilities	Preparation of an assignment.					
Screening student work*(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Class attendance	1	Research	1	Practical training	
	Experimental work		Report			
	Essay		Seminar essay			
	Tests		Oral exam	0.5		
	Written exam	1	Project	1.5		
Grading and evaluating student work in class and at the final exam	The student may choose between following options: - continous assessment and assessment of the assignment or - final exam and assessment of the assignment.					

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	J.Margeta: Oborinske i otpadne vode: teret onečišćenja i mjere zaštite, Građevinski fakultet, Split, 2007.;		
	J. Margeta (prijevod): Uređaj za pročišćavanje komunalnih otpadnih voda, WHO, Athens, 2001		
	S. Tedeschi: Zaštita vodnih sustava i pročišćavanje otpadnih voda, Građevinski institut, Zagreb, 1996.;		
Optional literature (at the time of submission of study programme proposal)	J. Margeta: Guidelines on Sewage Treatement and Disposal for the Mediterranean Region, WHO-GEF, Athens, 2004.		
Quality assurance methods that ensure the acquisition of exit competences	Quality assurance will be performed at three levels: (1) University level, through questionnaires; (2) Faculty level by Quality Control Committee; (3) Lecturer's level.		
Other (as the proposer wishes to add)			