### COURSE DESCRIPTION CARD – SPECIMEN

<table>
<thead>
<tr>
<th>Field of study</th>
<th>Faculty of Civil Engineering and Environmental Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialization/ diploma path</td>
<td>Study profile Academic profile</td>
</tr>
<tr>
<td>Course name</td>
<td>Water and wastewater technology II</td>
</tr>
<tr>
<td>Course code</td>
<td>IS-FCEE-00030W</td>
</tr>
<tr>
<td>Course type</td>
<td>Erasmus</td>
</tr>
<tr>
<td>Forms and number of hours of tuition</td>
<td>Semester Winter</td>
</tr>
<tr>
<td>L</td>
<td>C</td>
</tr>
<tr>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Entry requirements</td>
<td>Basic knowledge of: biology, biotechnology, chemistry, ecology</td>
</tr>
<tr>
<td>Course objectives</td>
<td>Types of advanced technologies for wastewater treatment, systems and their mechanical, biological elements, etc. Municipal and industrial wastewater characteristic. Calculations of pollution loads, the efficiency of contaminants removal. Knowledge about types of treatment technologies, their differences, advantages and disadvantages. Identification of pollution parameters, analytical methods. Legal requirements for treated wastewater discharged into the environment (rivers, land).</td>
</tr>
<tr>
<td>Teaching methods</td>
<td>Multimedia presentation (lecture), conducting research to identify contaminants in wastewater (laboratory classes), design of WWTP (project)</td>
</tr>
<tr>
<td>Assessment method</td>
<td>lecture – written or oral exam; laboratory classes – report on research carried out, project – implementation of the project, presentation and discussion</td>
</tr>
<tr>
<td>Symbol of learning outcome</td>
<td>Learning outcomes</td>
</tr>
<tr>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LO1</td>
<td>Student has knowledge of basic science, including chemistry and biology, essential to understanding the processes occurring in the environment or processes generated in connection with activities in the field of environment</td>
</tr>
<tr>
<td>LO2</td>
<td>Student has an elementary knowledge of the technologies and systems (materials) used in wastewater treatment</td>
</tr>
<tr>
<td>LO3</td>
<td>Student has a basic knowledge of the current situation and the latest development trends in environmental engineering. Student knows standards, specific rules and law connected with wastewater treatment technology.</td>
</tr>
<tr>
<td>LO4</td>
<td>Student is able to obtain information from the literature and databases about different types of wastewater, technologies of treatment, WWTP installations etc. Student can compare knowledge from different sources, interpret data, make conclusions, formulate and justify own opinions.</td>
</tr>
<tr>
<td>LO5</td>
<td>Student is able to formulate technological systems used in environmental engineering</td>
</tr>
<tr>
<td>LO6</td>
<td>Student is responsible for own work and can work in a team during study, takes responsibility for collaborative research.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Symbol of learning outcome</th>
<th>Methods of assessing the learning outcomes</th>
<th>Type of tuition during which the outcome is assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO1</td>
<td>evaluating the student's reports, exam, design presentation</td>
<td>L, LC, P</td>
</tr>
<tr>
<td>LO2</td>
<td>exam, report, design presentation</td>
<td>L, LC, P</td>
</tr>
<tr>
<td>LO3</td>
<td>exam, design form and presentation</td>
<td>L, LC, P</td>
</tr>
<tr>
<td>LO4</td>
<td>evaluating the student's work during preparing report and project</td>
<td>LC, P</td>
</tr>
<tr>
<td>LO5</td>
<td>discussion of the student's design</td>
<td>P</td>
</tr>
<tr>
<td>LO6</td>
<td>evaluating the student's work during conducting research and preparing project</td>
<td>LC, P</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student workload (in hours)</th>
<th>No. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculation</td>
<td></td>
</tr>
<tr>
<td>lecture attendance</td>
<td>30</td>
</tr>
<tr>
<td>participation in classes</td>
<td>75</td>
</tr>
<tr>
<td>preparation for laboratory classes, project</td>
<td>5</td>
</tr>
<tr>
<td>working on projects, etc.</td>
<td>10</td>
</tr>
<tr>
<td>participation in student-teacher sessions related to the classes/seminar/project</td>
<td>5</td>
</tr>
<tr>
<td>implementation of project tasks</td>
<td>5</td>
</tr>
<tr>
<td>preparation for and participation in exams/tests</td>
<td>5</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>135</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quantitative indicators</th>
<th>HOURS</th>
<th>No. of ECTS credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student workload – activities that require direct teacher participation</td>
<td>75</td>
<td>3</td>
</tr>
<tr>
<td>Student workload – practical activities</td>
<td>55</td>
<td>2</td>
</tr>
<tr>
<td>Supplementary references</td>
<td>Wastewater and biosolids treatment technologies, Pollution Engineering 2001</td>
<td></td>
</tr>
<tr>
<td>Organisational unit conducting the course</td>
<td>Department of Environmental Engineering Technology</td>
<td>Date of issuing the programme 09.03.2021</td>
</tr>
<tr>
<td>Author of the programme</td>
<td>Joanna Struk-Sokołowska, PhD</td>
<td></td>
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</tbody>
</table>

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