

<b>Faculty</b>	<b>Architecture, Civil and Environmental Engineering</b>
Course Title	Project 5: Apparatus- and Plant Engineering
Number of ECTS credits	6
Hours per week (SWS)	2 + 2 +1
Semester	Autumn Term (Winter Semester)
Course objective	<p>By passing this module, students can:</p> <ul style="list-style-type: none"> <li>• Recognize essential questions of an environmental task and create solutions</li> <li>• Represent the solution concept in the form of basic and procedural images</li> <li>• Create simple technical drawings with AUTOCAD and R + I-CAD</li> <li>• Describe processes based on balance-sheet equations</li> <li>• Dimension the system required for the solution concept with all system components, apparatus and pipelines</li> <li>• Design the measurement and control technology required for optimum operation and present it in the form of R + I flow diagrams</li> <li>• Explain the developed solution concept of an environmental installation in English</li> </ul>
Prerequisites	Engineering and science degree programmes
Recommended reading	<p>Hemming, W.: Verfahrenstechnik          Bock, H.: Fließbilder, ihre Funktion und ihr Zusammenbau aus Geräten          Helmus, F. P.: Anlagenplanung          Ullrich, H.J.: Anlagenbau</p>
Teaching methods	Seminar with practical tutorials, project diaries, work in small groups, subprojects, learning coaching

Assessment methods	Term paper (PL) and oral exam (PL)
Language of instruction	English
Name of lecturer	Prof. Dr. Lars Jürgensen
Email	<a href="mailto:Lars.Juergensen@hs-bremen.de">Lars.Juergensen@hs-bremen.de</a>
Link	<a href="https://www.hs-bremen.de/mam/hsb/fakultaeten/F2/U/u5.6_pro5_project_5-apparatus-_and_plant_engineering.pdf">https://www.hs-bremen.de/mam/hsb/fakultaeten/F2/U/u5.6_pro5_project_5-apparatus-_and_plant_engineering.pdf</a>
Course content	<p>The module teaches basic knowledge of apparatus and plant planning. In detail, the following aspects are covered:</p> <ul style="list-style-type: none"> <li>• Analysis of environmental questions with the aim of a solution concept</li> <li>• Optimal choice of possible solutions, e.g. batch or continuous process</li> <li>• Presentation of the developed solution concept based on basic and process flow diagrams with AUTOCAD and R + I-CAD</li> <li>• Choice of optimal pumps as well as dimensioning and representation of pumping stations</li> <li>• Dimensioning and representation of pipelines</li> <li>• Choice of optimal plant components such as reactors and separators</li> <li>• Presenting the advantages and disadvantages of these system components for the present concept</li> <li>• Dimensioning of this plant component by applying balance equations</li> <li>• Determining the optimal embodiment of the equipment used</li> <li>• Defining a measurement technique required for optimum operation</li> <li>• Optimal choice between manual control or control loops</li> <li>• Foundations of R + I flow diagrams and representation of the MSR technique of the solution concept</li> </ul>