

Name	Physicochemical water treatment processes
ECTS credits	5
Year / Semester	II / 1 <sup>o</sup>
Specific learning outcomes	<p>On successful completion of this module students should be able to:</p> <p>1 – The characterization of the discharges and the metrics of the different physico-chemical water treatment processes,</p> <p>2 – calculation and design of different physico-chemical water treatment processes,</p> <p>3 – Participate in class discussions with colleagues and with teachers</p>
Contents	1. Coagulation flocculation; 2. Decantation; 3. Filtration; 4. Calco-carbonic equilibrium; 5. Disinfection; 5. Membrane processes with pressures gradients.
Teaching and learning methods	Face to face, 45 hours
Teaching techniques	Practical classes, 45 hours
Assessment methods	<p>Written.</p> <p>First and second written tests are foreseen.</p> <p>The first written test will be devoted to the assessment of the level of achievement of the first part concerning the characterization of the discharges and the metrics of the different physico-chemical processes of water treatment and the calculation of some processes like coagulation and decantation.</p> <p>The second written test will be devoted to the assessment of the level of achievement of the second part concerning the Filtration, Calco-carbonic equilibrium, Disinfection and Membrane.</p>
Assessment criteria	<p>In the first test students should demonstrate their ability to calculate the different parameters for water characterization and also to calculate the coagulation flocculation and decantation process. In the second test students will be able to calculate the other physico-chemical process such as Filtration, Calco-carbonic equilibrium, Disinfection and Membrane.</p> <p>Finally, students' ability to participate in class discussions with teachers and colleagues will be assessed in practical classes.</p>
Assessment metrics	Attribution of a final grade
Criteria of attribution of the final grade	<p>The grade goes from 1 (minimum) up to 20 (maximum). The minimum threshold to pass is 7. To pass the exam students should obtain the minimum evaluation in all the assessments.</p> <p>The final grade will be determined according to the following rules:</p> <ul style="list-style-type: none"> <li>- Written exam: 50%</li> <li>- term written test: 20%</li> <li>- Practical classes : 30%</li> </ul>
Preparatory course units	N.A.
Didactic material	<ul style="list-style-type: none"> <li>• Les traitements de l'eau, Procédés physico-chimiques et biologiques, cours et problèmes résolus, Claude Cardot, Technosup, Ellipses, Nouvelle édition, 2010.</li> <li>• Processus unitaires du traitement de l'eau potable, w. j. Masschelein, traduit de l'américain par Chevolet, TEC et DOC Lavoisier, 1996.</li> <li>• L'analyse de l'eau, Jean Rodier, Edition Dunod, 8<sup>ème</sup> édition, 1996.</li> <li>• Memento technique de l'eau, Degrement, Edition TEC et DOC Lavoisier, 1992..</li> </ul>