

Curriculum - Academic Year 2018-19
Characteristics of the Course Units

Name	<i>Liquid-Liquid Extraction</i>
ECTS credits	4
Year / Semester	II/2°
Specific learning outcomes	<p><i>On successful completion of this module students should be able to:</i></p> <ul style="list-style-type: none"> - <i>make balance sheets of the extractors,</i> - <i>size the extractors</i>
Contents	<i>Introduction to liquid liquid extraction; Graphical representation of ternary mixtures; Material reviews on the extractors; Single-stage extraction.; Cross flow extraction; Countercurrent extraction; Continuous contact extraction; Material balance on the extraction columns; Countercurrent extraction with reflux; Study of the enrichment section; Study of the exhaustion section.</i>
Teaching and learning methods	<i>Face to face, 45 hours</i>
Teaching techniques	<i>Lectures, 22.5 hours Practical classes, 22.5 hours</i>
Assessment methods	<p><i>Written and oral.</i></p> <p><i>A two mid-term written tests and a final-term written test are foreseen.</i></p> <p><i>The first mid-term written test will be devoted to the assessment of the level of achievement of material reviews on the extractors (ability of students to make balances on extractors). The second mid-term written test will be devoted to the assessment of the level of achievement of Study of the exhaustion section.</i></p> <p><i>The final term written test will be on the whole program.</i></p>
Assessment criteria	<p><i>In the mid-term test students should demonstrate their ability to learn how to size the devices liquid-liquid extraction, based on the theoretical floor concept and applied graphical construction methods, material reviews on extractors by assuming ideal flows and theoretical number of stages, this for different methods extraction: single contact extraction, cross flow extraction, countercurrent extraction discontinuous and continuous contact.</i></p> <p><i>In the final term test students will be able design any equipment used in liquid-liquid extraction.</i></p> <p><i>Finally, students' ability to participate in class discussions with teachers and colleagues will be assessed in practical classes.</i></p>
Assessment metrics	<i>Attribution of a final grade</i>
Criteria of attribution of the final grade	<p><i>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.</i></p> <p><i>The final grade will be determined according to the following rules:</i></p> <ul style="list-style-type: none"> - <i>Mid-term written tests : 20%</i> - <i>Final term written test: 70%</i> - <i>Practical classes assessments : 30%</i>
Preparatory course units	N.A.
Didactic material	J. M. Coulson & J. F. Richardson " <i>Chemical_Engineering_Volume_2</i> ", Butterworth-Heinemann