

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

Name	Mass Transfer
ECTS credits	5
Year / Semester	I/2°
Specific learning outcomes	<p>On successful completion of this module students should be able to:</p> <p>1 – Demonstrate knowledge and understanding of the fundamentals of the mass transfer discipline and of the fundamental hypothesis of the one-dimensional calculation approach</p> <ul style="list-style-type: none"> – apply Fick's first law – calculate diffusion coefficient for fluids – express steady-state molecular diffusion <p>2 – Recognize the different modes of mass transfer</p> <p>3 – Calculate mass transfer in different familiar configurations and under assigned boundary conditions, by choosing the most suitable numerical or analytical method</p> <p>4 – Illustrate the fundamentals of the mass transfer discipline and of the fundamental hypothesis of the one-dimensional calculation approach</p> <p>5 - will analyze mass transfer in two-phase fluid systems</p> <ul style="list-style-type: none"> – determine mass transfer between phases – analyse mass transfer coefficients – calculate tower height and number of transfer units <p>6 - will explain and analyze equilibrium stage separation</p> <ul style="list-style-type: none"> – Make material balance calculations on separation cascades.
Contents	Some fundamental ideas of mass transfer(concentrations, velocities, flux, Fick's law of diffusion, diffusion coefficients), Mass transfer equations and boundary, Diffusion mass transfer, convective mass transfer, interface mass transfer, material balance in contacting equipment.
Teaching and learning methods	Face to face, 56 hours
Teaching techniques	Lectures, 24 hours Practical classes, 32 hours
Assessment methods	Written. A written tests and a final-term written exam are foreseen. The written tests and a final –term written exam consists of exercise problems to be solved, which are similar to those presented during exercise sessions.
Assessment criteria	In the written tests, students should demonstrate their ability to identify the mass transfer mode and to calculate mass transfer in a one-dimensional configuration and under assigned boundary conditions. In the final term test, students will be required to solve a problem related to a complex system.
Assessment metrics	Attribution of a final grade
Criteria of attribution of the final grade	The final grade will be determined according to the following rules: <ul style="list-style-type: none"> - written tests: 20% - Final term written test: 50% - Practical work assessments: 30%

Preparatory course units	N.A.
Didactic material	<i>R.B. Bird, W.E. Stewart & E.N. Lightfoot "Transport phenomena", John Wiley & Sons, 2002.</i> <i>H.D. Baehr & K. Stephan "Heat and mass transfer", Springer, 2006.</i> <i>J.R. Welty, C.E. Wicks, R.E. Wilson & G.L. Rorrer "Fundamentals of momentum heat and mass transfer", Wiley, 2007.</i>