

Unit operations 1

 ECTS
5 credits Component
INSTITUT
NATIONAL
DES SCIENCES
APPLIQUEES
TOULOUSE Number of
hours
59h

Presentation

Description

Programme (detailed contents):

* Intermolecular and interfacial interactions occurring in physical and chemical processes (interfaces and colloids - molecular interactions - surface tensions - capillarity - wettability - adhesion - Surfactants - Interfacial forces : application to colloids), coalescence...

* Membrane, filtration media and fouling (types of processes, media, membrane- operating parameters and fouling phenomena for pressure-driven membrane processes, retention phenomena), effect of operating conditions on the process selectivity and productivity, mass balances and design of deep-bed filters, of membrane processes. Energy consumption.

* Mixing

Macroscopic characterization of the mixing

Technology of mixers : stirred tanks and static mixers

Mixers design

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts) :

- the basic concepts of interface and colloidal systems

- phase equilibrium diagrams

- general concept for mass transfer unit operations (ideal stages, operating line...).

Kinetic limitations and theirs effects on separation and mixing

- different ways to perform separation processes

- basic concepts of deep-bed filtration and membrane separation (UF/MF/NF)

The student will be able to:

- identify interactions between compounds or interface/ compounds involved in separation and mixing operations

- identify main membrane fouling phenomena for a given application

- use the equilibrium diagrams

Pre-requisites

Thermodynamics.

Fluid properties and mass transfer.

Hydraulics and dispersed systems.

Basic concepts of Chemistry and Physics .

Useful info

Contacts

Education manager

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Place

➤ [Toulouse](#)