

# Advanced Separation processes for new water-uses, valorisation and new resources



ECTS  
5 crédits



Hourly volume  
15h

## Introducing

### Objectives

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

- to know the context of the new resources for water and compounds of interest (sea/brine waters, secondary effluent, food bio products )
- To know specific processes for water production (desalination, reuse, ultrapure water, water for industrial use ..)
- principle and design of sorption unit operations (ion exchange, preparative chromatography, adsorption)
- principle and design of advanced membrane separation operations (reverse osmosis, electromembrane processes)
- principle and design of unit operations based on a phase transition (precipitation, crystallization, etc.)

The student will be able to:

- to design processes for domestic wastewaters tertiary reuse
- to design desalination processes
- to design design processes for ultrapure water production or specific water for utilities
- to design processes for N , P and C recovery
- identify new resources
- conceive and design systems for these new resource use
- apply the knowledge to other case studies

## Necessary prerequisites

Unit operation I4PETF31  
Chemistry I1ANBC11  
Energy and mass balance I3BEGP11  
2AICBE Numerical Methods of resolution

## Practical info

### Location(s)

 Toulouse