

# Processes simulation and analysis



ECTS  
5 crédits



Hourly volume  
73h

## Introducing

### Objectives

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

- the basics of chemical engineering process simulation tools at various scales
- the life cycle and carbon balance principles
- the basics of multidimensional analysis
- the elementary notions about process optimisation

The student will be able to:

- select the appropriate simulation tool with respect to the scale of investigation
- synthesize their knowledge to analyze the results of a commercial simulation tool
- simulate industrial processes in steady state
- perform the Life Cycle Analysis of an existing process
- use the FLUENT software to simulate single phase flows
- use the PROSIM Plus software to simulate general steady state processes
- use the UMBERTO software to perform a global analysis of a process within its environment.
- gather knowledge from various fields to choose the modelling approach, perform the set-up of the simulation and analyse the results
- perform an optimisation study with PROSIM
- set up simulations of unsteady state processes with PROSIM Batch and FLUENT

## Necessary prerequisites

Modelling and numerical methods for transport phenomena (momentum, mass and energy) and thermodynamics

Basic concepts for Unit Operation

Technology and design of Unit Operation

Hydraulic and dispersed systems

Transport and reaction in fluid medium

## Practical info

### Location(s)

 Toulouse