ChE-451

# Process development I

Zaza Philippe

| Cursus | Sem. | Type |
|---|---|---|
| Biotechnology minor | H | Opt. |
| Energy Management and Sustainability | MA1, MA3 | Opt. |
| Energy minor | H | Opt. |
| Ing.-chim. | MA1, MA3 | Obl. |

| | |
|---|---|
| Language of teaching | English |
| Credits | 2 |
| Session | Winter |
| Semester | Fall |
| Exam | Written |
| Workload | 60h |
| Weeks | 14 |
| **Hours** | **2 weekly** |
| Lecture | 2 weekly |
| **Number of positions** | |

## Summary

Familiarize the students with integrated process development and industrial technologies.

## Content

**Process analysis and description**

- Development strategies
- Mass and energy balances
- Industrial equipments
- Installation concepts
- Technical limitations
- Sizing of industrial equipments
- Energy use
- Introduction to steam process
- Design of technical equipment
- Economical estimations (total product & investment costs)

**Optimization**

- Influence of process modifications
- Risk analysis introduction
- Optimum choice
- Development program definition
- Use of process simulation software
- Scale down and scale up

## Resources

### Ressources en bibliothèque

- Ajouter au Panier Systematic methods of chemical process design / Biegler
- Scale-up in chemical engineering / Zlorkarnik
- Ullmann's Encyclopedia of Industrial Chemistry
- Process development / Vogel

### Websites

- http://scgc.epfl.ch/telechargement_cours_chimie.htm