Summary
This course applies concepts from chemical kinetics and mass and energy balances to address practical chemical engineering problems, with a strong focus on industrial applications. Students develop the ability to analyze and design reactors frequently encountered in industry.

Content
- Derivation of differential, algebraic, and integrative models for batch reactors, continuously stirred reactors (CSTRs), plug flow reactors (PFRs), and packed bed reactors (PBRs), as well as membrane and semibatch reactors.
- Modeling multiple reactors in series.
- Effect of reaction kinetics and fluent phase on reactor performance.
- Multiple and complex reaction systems.

Learning Prerequisites
Required courses
Introduction to Chemical Engineering (ChE-201), Introduction to Transport Phenomena (ChE-204), Chemical Thermodynamics (CH-241), Chemical Kinetics (CH-342)

Learning Outcomes
By the end of the course, the student must be able to:
- Compute reactor size required for a given conversion.
- Compute reactor space time.
- Compare performance of different reactors.
- Assess / Evaluate effects of temperature and pressure on performance.
- Design reactor configuration for a given process.

Resources
Ressources en bibliothèque
- Elements of chemical reaction engineering / Fogler
- Chemical reaction engineering / Levenspiel
Notes/Handbook
Elements of Chemical Reaction Engineering, H. Scott Fogler
Chemical Reaction Engineering, O. Levenspiel