

Introduction to Chemical Engineering

Teaching by:

Vassily Hatzimanikatis (vassily.hatzimanikatis@epfl.ch)

Assistants:

Denis Joly (denis.joly@epfl.ch)

Konrad Lagoda (konrad.lagoda@epfl.ch)

Zi Xuan Ng (zixuan.ng@epfl.ch)

Office hours: Mondays 16h-19h (CH H4 625) or schedule by email

Fridays, 14h15 - 17h00
2024-2025

Course Schedule

Date	Subject
13-Sep	1. Fundamentals of Material Balances 1.1. Process definition and classification 1.2. Material balance calculations
20-Sep	1.3. Balances on multiple-unit processes
27-Sep	Review on Mass Balances (non-reactive)
04-Oct	1.4. Chemical reaction stoichiometry 1.5.1 Balances on reactive processes (part 1)
11-Oct	1.5.2 Balances on reactive processes (part 2) 1.6. Balances on multiple unit reactive processes Review on Mass Balances (non-reactive & reactive)
18-Oct	2. Energy and Energy Balances 2.1. Energy balances on closed systems 2.2. Open systems at steady state
25-Oct	3. Balances on Non-Reactive Processes 3.1. Energy balance calculation 3.2. Changes in Pressure, Temperature, Phases 3.3. Mixing and Solution
01-Nov	Fall break
08-Nov	4. Balances on Non-Reactive Processes (Midterm revision) Problems: Mass and Energy Balances on non-Reactive Systems
15-Nov	Midterm Exam: Mass & Energy Balances non-Reactive Systems
22-Nov	Review Midterm
29-Nov	5. Balances on Reactive Processes 5.1. Heats of reaction/combustion 5.2. Combustion reactions 5.3. Enthalpy of reaction 5.4. Energy balance calculation
06-Dec	6. Energy balances on mixing processes Review
13-Dec	Review and Study Session

Recommended textbook:
Elementary Principles of Chemical
Processes
Richard M. Felder & Ronald W.
Rousseau

Announcement: Midterm 15 Nov 2024

Schedule

- 15th November, 14:00 – 17:00
- **BS 160:** Abdoun – Hueguenin-Dezot
- **BS 170:** Humery – Woeffray

Rules

- No electronic devices, except for calculators
 - Print physical property tables
- Midterm exam format identical to Final exam (100pts)
- The Midterm grade (M) **only benefits** your Overall grade (O)
 - Two cases, depending on your final exam grade (F):
 - $M > F$: $O = M \cdot 0.3 + F \cdot 0.7$
 - $M < F$: $O = F$

Session VIII: Friday 08 November 2024

Today: Revision session

Exercises resemble midterm problems (100pts)

- Mass Balance Non-Reactive (30 pts)
- Mass Balance Reactive (30 pts)
- Energy Balance Non-Reactive (40 pts)