

# Welcome to EMC

—  
Dept. of Chemical and  
Metallurgical Engineering

Prof. Rodrigo Serna  
Fall, 2023



Aalto University  
School of Chemical  
Engineering



# A!

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Engineering



# School of Chemical Engineering

*Prof. Rodrigo Serna  
Dept. of Chemical and Metallurgical Engineering  
Aalto University, Fall 2024*

# School of Chemical Engineering

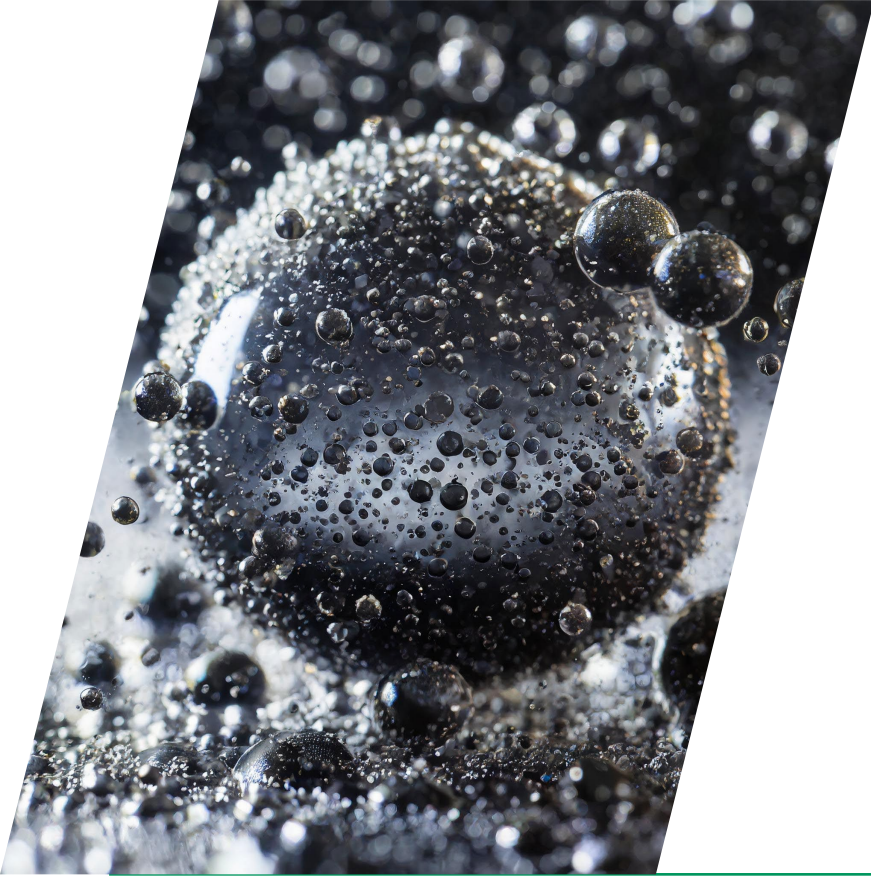
**We perform research and offer education beyond chemistry and chemical engineering: we are process engineers**

**This means, we are also metallurgical engineers**

**We host a Master's degree program in Chemical and Metallurgical Engineering, with courses in:**

- Mineral processing and recycling
- Sustainability of raw materials production
- Hydrometallurgy
- Pyrometallurgy
- Thermodynamics of Materials

# Mineral Processing and Recycling Group



- **Prof. Rodrigo Serna**
  - Contact info: [rodrigo.serna@aalto.fi](mailto:rodrigo.serna@aalto.fi)
- **Research interests and expertise:**
  - Process engineering for the responsible production of raw materials
  - Deep understanding of interfacial phenomena for separation technologies
  - Sustainable chemical systems in froth flotation
  - Development of engineering parameters supporting the circular economy
- **MinPro Group in 2024**
  - 2 Postdoctoral Researchers
  - 6 Doctoral Candidates
  - 4-5 Master's thesis per annum



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# CHEM- E6140

## Fundamentals of Minerals Engineering and Recycling

*Prof. Rodrigo Serna*  
*Dept. of Chemical and Metallurgical Engineering*  
*rodrigo.serna@aalto.fi*

# CHEM-E6140 Fundamentals of Minerals Engineering and Recycling

**At the Bachelor's level, you may have learned general basic concepts related to topics such as:**

- Mineralogy
- Mass and energy balance
- Fluid flow
- Properties and characterization of solids

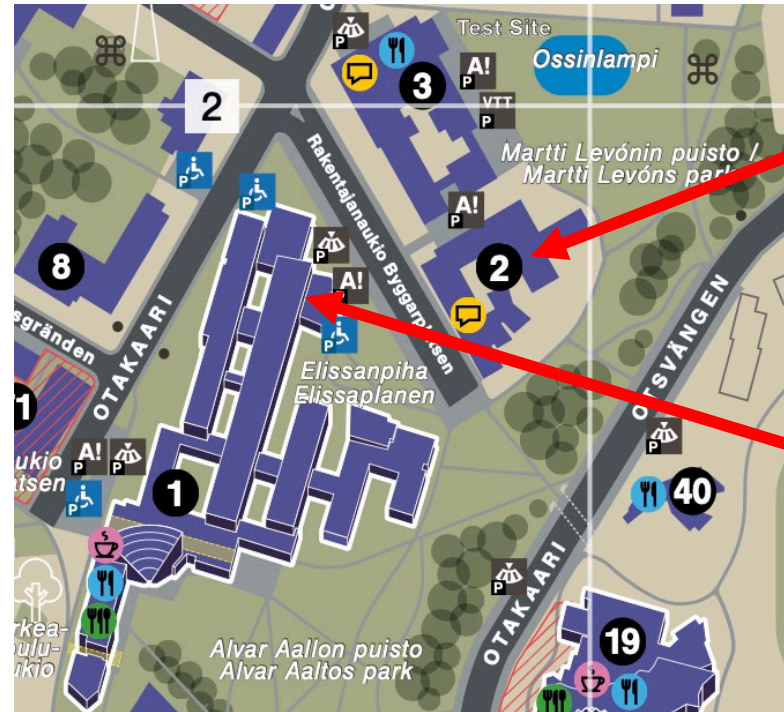
**The aim of this course is to understand the application of these fundamental principles in mineral processing plants**



# CHEM-E6140 Fundamentals of Minerals Engineering and Recycling

**Schedule: 04.09.-11.10.2023**

- Lectures on **Wednesdays 10:15** (U7 PWC - U135a, Otakaari 1) and **Thursdays 10:15** (U4 - U142, Otakaari 1)  
- *Exception: Sept. 11 in U9 – U271, Otakaari 1*
- Workshops: **Fridays 8:15** (Y430, Otakaari 1)
- Final Exam: Wednesday, 15.10, 9:00 am
- More information on MyCourses website



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# CHEM- E6111

## Engineering Principles for Metallurgical Processes

*Prof. Rodrigo Serna*  
*Dept. of Chemical and Metallurgical Engineering*  
*rodrigo.serna@aalto.fi*



# CHEM-E6111 Engineering Principles for Metallurgical Processes

- **The course gives an overview on metallurgical principles especially for students who has no SME background**
  - Introduction to metallurgical processes
  - Thermodynamics as a driving force in metallurgical processes
  - Mass and energy balances from the context of metallurgical processes e.g. recirculation of water in the system, energy balance in high-temperature reactors. The use of transport phenomena
  - Introduction to unit operations and processes in minerals engineering, hydrometallurgy and pyrometallurgy
  - Metallurgical accounting (e.g. uncertainty analysis)
  - Sustainability in context of metallurgical engineering



# CHEM-E6111 Engineering Principles for Metallurgical Processes

**Schedule: 04.09.-17.10.2023**

- Lectures on **Tuesdays 10:15** (Ke2, A304 Kemistintie 1) and **Fridays 12:15** (Aluminum, C100 Vuorimiehentie 2)
  - *Exception: First week, **Wednesday (NOT Tuesday)** 04.09. at 8:15 in A215, Otakaari 1*
- More information on MyCourses website
- Responsible professor:
  - *Prof. Michael Gasik*
  - *michael.gasik@aalto.fi*



We are here

Lectures are here

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