

Industrial Reaction Engineering

Subject area: Industrial Engineering

University:	DTU
Level:	MA all years
Teaching mode:	hybrid: some students participate online, other students attend real-life
Instructor(s):	Kim Dam-Johansen

Short description

Reactions in production processes and in gas cleaning processes take place in multi-phase reactors, e.g. Production of Pharmaceuticals, calcination of lime in the production of calcium hydroxide, production of cement, combustion of solid and liquid fuels in the production of power and heat, catalytic and non-catalytic cleaning of flue gas and catalytic production of important products in different reactors including two or more phases.

Full description

<https://kurser.dtu.dk/course/28443>

Learning outcomes

A student who has met the objectives of the course will be able to:

- characterize solid particulates with respect to size, size distribution, shape, porosity, texture etc.
- calculate effective diffusion coefficients in simple structures.
- establish and solve mathematical models for gas-solid reactions (transport phenomena coupled to chemical reactions)
- evaluate structure models for gas-solid reactions.
- establish and solve models for gas-liquid-solid reactions.
- explain the enhancement factor for gas-liquid reactions.
- analyse and simplify complicated reaction engineering problems in order to establish mathematical models for the main phenomena.
- evaluate calculations for reaction engineering problems in order to use the results for practical design.

General information

Contact hours per week: 4

Total workload: 190 (in student hours for the whole course)
ECTS credits: 7.5
Language: English

Course start date: 03 February 2023
Course end date: 09 May 2022
Add. info about start date:
Weekly teaching day/time: Friday from 8.30-12.00
Time zone: CET (Denmark, Germany, France, Netherlands, Switzerland, Czech Republic)

Further information:

Prerequisites: An introduction course in chemical reaction engineering, experience in numerical solutions of mathematic models, such as 1 p course in Fortran or Matlab

Activities and methods: Lectures, Group work, Self-study, Exercises

Presence on campus:

Final examination

Form: project
Date:
Location/format: On campus or online
Re-sit possibility:
Transcript available: on request
Add. info/requirements:

Registration

To register for this course, follow the registration requirements of your **home university** as specified here: www.euroteq.eu/courses-registration.

Administration

Number of places:
Minimum participants:

Internal course code: 28443

Contact: kdj@kt.dtu.dk

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