

Name of the course	Catalytic reaction engineering
Number of instruction hours	20
Outline of course/module content	The course discusses catalytic phenomena with extension to catalyst and reactor design. Topic includes: Interrelationship between structural and chemical properties of solid materials and their catalytic properties; In situ characterization and theoretical modeling to gain the information necessary for a rationally guided catalyst design; Analysis and interpretation of kinetic data and catalytic phenomena; Optimization of the interplay between chemical reaction and mass- and heat transfer in the catalytic system; Effectiveness of catalyst pellets as a function of shape, size, pore size, type of kinetics and diffusion, and temperature and pressure conditions; Catalyst deactivation; Consequence of catalyst deactivation for process design and operation; Evaluation of catalysts for chemical, petrochemical and environmental application; Design and optimization of various types of heterogeneous catalytic reactors; Selected case studies.
Description of instruction methods	Lecture and discussion
Description of course/module requirements	Seminar work, Oral exam