

**SYLLABUS**

# **Surface and Colloid Chemistry 7.5 credits K7002K**

**Yt- och kolloidkemi**

**Course syllabus admitted: Autumn 2014 Sp 1 - Spring 2016 Sp 4**

**DECISION DATE  
2014-06-18**

# Surface and Colloid Chemistry 7.5 credits K7002K

## Yt- och kolloidkemi

### Second cycle, K7002K

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Kemi	Chemistry

## Entry requirements

90 credits in Chemical Engineering, including the courses M0031M Linear Algebra and Differential Equations and K0010K Physical Chemistry or corresponding.

## Selection

The selection is based on 30-285 credits

## Examiner

Anders Sand

## Course Aim

The aim of the course is that the student, after completion of the course, should:

- be able to explain basic surface and colloidal concepts such as surface energy, surface potential, coagulation, capillary condensation, viscosity, hydrophobicity and emulsions.
- have good knowledge about diffusion and light scattering properties of colloidal particles
- be well acquainted with the association properties of surfactants
- have good knowledge about adsorption of surface active molecules at interfaces
- be well acquainted with factors affecting colloidal stability i.e. how to prevent or facilitate aggregation
- know what viscosity is and be able to perform surface chemical calculations

## Contents

The subject matter of the course covers; the colloidal state, kinetic and optical properties, adsorption equilibria at the interface between different phases, charged interfaces, colloidal stability, and emulsions and foams.

The theory is applied during laboratory and calculation exercises.

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The course is presented in the form of lectures and laboratory exercises. At lectures the students are expected to ask questions. Lectures with an active dialog are always more fruitful both for the student and the teacher. The teacher will get knowledge about the student's way of thinking and has the possibility to correct if there is any misunderstandings and simultaneously questions/thoughts together with the lecturers comments will also improve the course-fellow's understanding of the subject. During the lectures problems demanding an analytical solution are demonstrated. The students are expected to actively participate in these lectures by demonstrating solutions to the problems in front of their course-fellows. Student cooperation is recommended. The laboratory exercises are compulsory as well as the first lecture. These exercises are aimed at giving a more concrete feeling for the theory and therefore contribute to increased/strengthened understanding.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Approved laboratory reports and an approved written examination are prerequisites for an approved examination. The written examination will reflect the student's ability to solve surface chemistry problems and explain surface chemistry concepts. The course exam is also an opportunity to learn. Differentiated grades are applied. Grade scale: 3 4 5 Students who have failed an examination on five occasions will not be allowed further resits.

## Remarks

Advanced level, the course is compulsory for students on the Masters programme in Chemical and biochemical engineering and on the specialization in Mineral and Metallurgical engineering on the Masters programme in Natural Resource Engineering.

Study guidance is available on Fronter in the corresponding room.

## Overlap

The course K7002K is equal to M0004K, M7009K

2500

## Literature. Valid from Autumn 2007 Sp 1

Shaw, D. J.: Introduction to Colloid and Surface Chemistry, latest edition.

Compendia: Problems and laboratory instructions.

## Course offered by

Department of Civil, Environmental and Natural Resources Engineering

## Items/credits

Number	Type	Credits	Grade
0001	Written exam	6	G U 3 4 5
0002	Laboratory report	1.5	U G#

## Last revised

by Eva Gunneriusson 2014-06-18

## Syllabus established

Course plan approved by the Department of Chemical Engineering and Geosciences 2007-02-28.