

KEMB07, Chemistry: Surface and Colloid Chemistry, 15 credits

Kemi: Yt- och kolloidkemi, 15 högskolepoäng
First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2009-11-26 and was last revised on 2009-11-26. The revised syllabus applies from 2009-11-27, spring semester 2010.

General Information

The course is an elective first-cycle course for a degree of Bachelor of Science, main field of study Chemistry.

Language of instruction: Swedish

Main field of studies

Chemistry

Depth of study relative to the degree requirements

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is to provide students with basic theoretical insights into the properties of polymer solutions and colloidal systems, on a molecular level.

The objective is that the students, on completion of the course, shall have acquired the following knowledge and skills.

Knowledge and understanding

On completion of the course, the students shall be able to

- describe the basic principles of surface activity and surfactant function in disperse systems
- describe the self-aggregation and solution chemistry of surfactants
- describe the basic properties of polymer solutions and how they may vary depending on the molecular weight, concentration, and temperature of the

polymers

- describe, in speech and writing, how fundamental colloidal principles control major technical processes and/or the function of regular consumer products

Competence and skills

On completion of the course, the students shall be able to

- demonstrate the ability to compile experimental data and summarise them in a written report
- describe, in a qualitative manner, colloidal interactions between particles and, based on these, assess colloidal stability and instabilit

Course content

The course deals with:

- surface energy and interface phenomena
- colloidal stability
- surfactants and association colloids
- emulsions and emulsion stability
- polymer solutions
- polymer gels
- rheology, and
- light and x-ray diffraction

The course includes a number of *laboratory exercises*. These are chosen in order to illustrate completed theoretical components and consolidate knowledge.

Major emphasis is placed on the students' written and oral presentations of laboratory work and group exercises.

Course design

The teaching consists of lectures and exercises, in which theoretical aspects are addressed. It also includes laboratory exercises chosen in order to illustrate completed theoretical components and consolidate knowledge. All laboratory exercises are compulsory.

Assessment

The assessment is based on a written exam.

A re-sit examination is offered soon after the examination to students who do not pass.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

For a grade of Pass on the whole course, the student must have passed the exam, all written assignments, the oral presentation and the lab exercises.

The grades awarded for the exam are Fail, Pass, and Pass with Distinction. The grades awarded for the lab exercises and the associated compulsory components, written assignments and oral presentation are Fail and Pass.

The final grade is determined by the grade of the exam.

Entry requirements

To be admitted to the course, students must have basic eligibility, Physics B, and have passed courses equivalent to:

- KEMA00 General and Analytical Chemistry, 7.5 credits, KEMA01 Organic Chemistry – Basic Course, 7.5 credits, KEMA02 Inorganic Chemistry – Basic Course, 7.5 credits and KEMA03 Biochemistry – Basic Course, 7.5 credits.

Students who have obtained the equivalent knowledge by other means may also be admitted to the course.

Further information

The course may not be included in a degree together with KEM017 Surface and Colloid Chemistry, 15 credits.

Subcourses in KEMB07, Chemistry: Surface and Colloid Chemistry

Applies from H13

- 0711 Surface and Colloid Chemistry, 10,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 0712 Surface and Colloid Chemistry, Laboratory Work, 5,0 hp
Grading scale: Fail, Pass

Applies from H07

- 0701 Surface and Colloid Chemistry, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 0702 Surface and Colloid Chemistry, Laboratory Work, 0,0 hp
Grading scale: Fail, Pass