



Faculty of Health, Science and Technology  
Chemistry

# Syllabus

## Surfaces, Interfaces and Colloids C

<b>Course Code:</b>	KEGC52
<b>Course Title:</b>	Surfaces, Interfaces and Colloids C <i>Ytor, gränsskikt och kolloider C</i>
<b>Credits:</b>	7.5
<b>Degree Level:</b>	Undergraduate level
<b>Progressive Specialisation:</b>	First cycle, has at least 60 credits in first-cycle course/s as entry requirements (G2F)

**Major Field of Study:**

KEA (Chemistry)  
KTA (Chemical Engineering)

**Course Approval**

The syllabus was approved by the Faculty of Health, Science and Technology 2021-01-28, and is valid from the Autumn semester 2021 at Karlstad University.

**Prerequisites**

Registered on Chemistry 60 ECTS credits with 30 ECTS credits completed, or equivalent

**Learning Outcomes**

The aim of the course is for students to acquire basic knowledge of the physical chemistry of surfaces, interfaces, and colloids. The aim of the course is also to give students the opportunity to practise modern presentation skills in the presentation of a completed laboratory project.

Upon completion of the course, students should be able to:

1. give an account of basic theories relating to the physical chemistry of surfaces, interfaces, and colloids,

2. relate the theories to surface and colloidal phenomena,
3. conduct empirical studies on colloidal and surface phenomena within the scope of a project and given time limits,
4. give an account of current issues pertaining to the physical chemistry of surfaces, interfaces, and colloids, and
5. use scientific literature in the assessment of empirical findings.

### **Content**

The course comprises two components: a theoretical component and a project. The theoretical component is roughly equivalent to four weeks of full-time study, while the project component is roughly equivalent to one week of full-time study. Instruction in the two components may be integrated and parallel.

#### Theoretical component

Instruction is in the form of lectures, seminars, and exercises. The lectures present the course content, and the exercises provide an opportunity for students to apply the presented theories in practice. The seminars offer students concrete opportunities to discuss the course content.

The course presents basic theories of surfaces, interfaces, and colloids in terms of their physical chemistry, as well as surface tension activities, surface activity interactions, electrostatics, adsorption, adhesion, colloidal stability, emulsions, microemulsions, foaming, association colloids, solubility, humidification and dissipation, friction and lubrication, and aerosols.

Students are expected to study independently to a large extent.

#### Project component

Students complete a project related to scientific literature in the field. The project can be either experimental or a literature review. In connection with the project, the course offers an introduction to software and technology used in reporting graphic material and producing so-called poster presentations or folders.

The project component may include a study visit at a company, research institute, or similar. Students may be requested to meet the cost of the study visit, in full or in part.

### **Reading List**

See separate document.

### **Examination**

The theoretical part of the course is assessed individually, on the basis of hand-in assignments in the form of essays. The project is assessed individually or in groups, on the basis of a poster presentation and an oral presentation.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

### **Grades**

One of the grades Pass with Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. For Engineering students, one of the grades Pass with Distinction (5), Pass with Some Distinction (4), Pass (3), or Fail (U) is awarded.

### **Quality Assurance**

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with

current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

**Course Certificate**

A course certificate will be provided upon request.

**Additional information**

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.

Students may be requested to meet the cost of the study visit, in full or in part.

The course KEGC52 cannot be included in the same degree programme as the courses KEGC51, KEAD51, KEAD52, KEGCY0 or KEADY0.