Faculty of Health, Science and Technology
Chemistry

Syllabus

Surfaces, Interfaces and Colloids C

Course Code:	KEGC51
Course Title:	Surfaces, Interfaces and Colloids C *Ytor, gränsskikt och kolloider C*
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has at least 60 credits in first-cycle course/s as entry requirements (G2F)

Major Field of Study:
KEA (Chemistry)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2016-08-25, and is valid from the Spring semester 2017 at Karlstad University.

Prerequisites
Enrollment in the Master of Science in Chemical Engineering programme at Karlstad University with at least 60 ECTS credits completed for programme courses, or registration for courses in Chemistry 60 ECTS cr with 45 ECTS credits completed. Students with qualifications in related fields may request individual eligibility assessment.

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,
4. give an account of current problems and issues pertaining to the physical chemistry of surfaces, interfaces, and colloids, and
5. use scientific literature in the assessment of empirical findings.

Content
General course content
The course comprises two concomitant components: a theoretical component and a project. The theoretical component is roughly equivalent to four weeks' full-time study, while the project

component is roughly equivalent to one week's full-time study. Instruction of the two components may be integrated.

Theoretical component
Students are expected to work independently. Instruction is in the form of lectures and exercises. The lectures present the course content, and the exercises provide an opportunity for students to apply the presented theories. 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.

Project
Students conduct laboratory experiments based on scientific literature in the field. In connection with this project, students conduct a literature review and are given an introduction to software and technology used in producing so-called poster presentations. The project component may include a study visit at a company, research institute, or equivalent. 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 a take-home examination in the form of essay questions. The project is assessed individually or in groups, on the basis of a poster presentation and an oral presentation of the same.

Grades
One of the grades Pass with Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. For students enrolled in the Engineering study programme, 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.