UNIVERSITY OF BORÅS

Textile Chemistry I - Organic and Physical Chemistry
Textilkemi I - Organisk och Fysikalisk Kemi

7.5 credits
7.5 högskolepoäng

Ladok Code: AT2TO1
Version: 3.0
Established by: Committee for Education in Technology 2017-06-21
Valid from: Autumn 2017

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Textile Engineering (A1N)
Disciplinary Domain: Technology
Prerequisites: Admission to the Master's program in Textile Engineering (or equivalent).
Subject Area: Textile Technology
Grading Scale: Seven-degree grading scale (A-F)

Content

In the course, the concepts stoichiometry, concentration and measurement accuracy, as well as acids and bases (pH, neutralization, buffer solutions) and basic organic chemistry (orbital, hybridization, functional groups, conjugated systems, reaction mechanisms) and also basic physical chemistry (enthalpy, entropy, Gibbs energy, reaction kinetics) and basic surface and colloid chemistry (colloidal systems, stabilization of colloidal systems, surface active molecules, surface tension, measurement of surface tension, micelles).

Learning Outcomes

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

Knowledge and understanding
1.1 account for and discuss basic chemical and physical principles that are important for textile materials, as well as pre-treatment and final preparation of these materials,
1.2 account for and discuss the chemical and physical phenomena that arise at the textile materials' boundary layers and surfaces,
1.3 account for and discuss the environmental and health-related problems that may arise when using chemicals in the textile processing chain,

Skills and abilities
2.1 be able to safely handle the common techniques/equipment in a chemical laboratory,
2.2 be able to safely handle basic stoichiometric calculations, as well as

Valuation and approach
3.1 in a correct manner and with regard to sources of error and statistical significance, be able to evaluate results obtained from a chemical experiment.

Forms of Teaching

The teaching consists of lectures and practical laboratory exercises.

The language of instruction is English.

Forms of Examination

The course will be examined through the following examination elements:

Written examination

Learning outcomes: 1-3
Credits: 4,0
Grading scale: E7

Implementation of laboratory work
Learning outcomes: 1.1, 2.1-2.2 and 3.1
Credits: 2,5
Grading scale: Fail/Pass

Laboratoy report
Learning outcomes: 1.1, 1.2, 2.2, 3.1
Credits: 1,0
Grading scale: Fail/Pass

The final course grade is determined by the grade of the written exam. In order to pass the course, it is however required that all examination elements are approved. Grading scale for the course's final grade is: Seven-degree grading scale (A-F).

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Materials

Course literature is in English.

Recommended literature:

Zumdahl S. S. and DeCoste D. J. *Chemical Principles*, 8th Ed. 2017, Brooks/Cole, Cengage Learning.

Pashley R. M. and Karaman M. E. *Applied Colloid and Surface Chemistry*. 2004 John Wiley & Sons Ltd., Chichester, England.

The teacher's presentation material will be available via the learning management system.

Student Influence and Evaluation

The course is evaluated in accordance with current guidelines for course evaluations at the University of Borås which state that students' perspectives are to be collected. The course evaluation report is published and made available to participating and prospective students in accordance with the above guidelines and forms the basis for the future development of courses and educational programmes. Course coordinators are responsible for conducting the evaluations as described above.

Miscellaneous

The course is primarily for students enrolled in the Master's program in Textile Engineering
This syllabus is a translation from the Swedish original.