



## Course syllabus

Faculty of Technology

Department of Built Environment and Energy Technology

1KT004 Kemi för ingenjörer, 7,5 högskolepoäng

Chemical Engineering, 7.5 credits

### **Subject Group**

Energy Technology

### **Level of classification**

First Level

### **Progression**

G1N

### **Date of Ratification**

Approved by Faculty of Technology 2017-12-18

The course syllabus is valid from autumn semester 2018

### **Prerequisites**

General entry requirements and Chemistry 1, Mathematics 3c, Physics 2 or Chemistry A, Mathematics D, Physics B (Field-specific entry requirements 8/A8).

## Objectives

After completing the course the student is expected to:

- Be well acquainted with chemical nomenclature and formulae,
- Understand the fundamental properties with chemical compounds; their chemical structure, their physical properties and phase changes,
- Understand and be able to describe chemical reactions from their thermodynamic, kinetics and equilibrium,
- Be able to perform laboratory work independently,
- Be able to judge the quality and precision with experimental methods and results,
- Be able to present, orally and in writing, methods and results used in or resulting from laboratory work.

## Content

The course consists of 2 modules.

### ***Module 1 Chemical Engineering 1 6 credits***

The module contains the following elements:

- Concepts in chemistry and nomenclature
- Chemical bonds and structures
- States of aggregation, properties and phase changes
- Chemical reactions:
  - Formulae and stoichiometry
  - Thermodynamics
  - Kinetics
  - Equilibria
- Acids and bases
- Electrochemistry
- Water chemistry
- Fundamentals of organic chemistry

- Nomenclature
- Functional groups and structures
- The chemical reactions of organic compounds

### ***Module 2 Chemical Engineering 2 1.5 credits***

The module contains the following elements:

This course comprises the laboratory exercises connected to the theory from course 1.

### Type of Instruction

Lectures, exercises and laboratory work. The laboratory exercises are compulsory. Presentations of laboratory results and exercises, other compulsory elements will be communicated at the beginning of the course.

### Examination

The course is assessed with the grades U, 3, 4 or 5.

The final grade is assessed by weighing the ratings on Module 1 and Module 2 during performances, so that good performance in module 2 can raise the overall rating.

Assessment of student performance usually takes place during special examination periods and will be done through project work, laboratory work, assignments and written examinations. Assessment will be both written and oral.

In order to pass, the objectives of the course should be achieved.

### Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

### Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: The course may not be included in a degree together with other course whose contents completely or partly corresponds with the contents of this course.

Overlap to about 50% rate 1KT001 and 1KT002, 7.5 hp.

### Other

Some elements of the course may entail costs defrayed by the course participant.

Students who successfully completed the course shall, at his request, receive course certificate.

### Required Reading and Additional Study Material

#### **Required reading**

Atkins, Jones, Laverman *Chemical principles - The quest for insight* W .H. Freeman, latest edition, approximately 1000 pp, loading instructions are provided.