Faculty of Health, Science and Technology
Chemistry

Syllabus

The chemistry of products D

Course Code:	KEAD61
Course Title:	The chemistry of products D *Produkters kemi D*
Credits:	15
Degree Level:	Master's level
Progressive Specialisation:	Second cycle, has only first-cycle course/s as entry requirements (A1N)

Major Field of Study:
KEA (Chemistry)
KTA (Chemical Engineering)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2017-02-15, and is valid from the Autumn semester 2017 at Karlstad University.

Prerequisites
Upper secondary level Swedish 3 or B or Swedish as a second language 3 or B, Englisn 6 or A, or equivalent.
Chemistry 90 ECTS credits of which 75 ECTS cr are completed, or equivalent. Engineering students specialising in chemical engineering must have completed 120 ECTS credits of programme courses, or equivalent.

Learning Outcomes
The aim of the course is that students acquire further insights into the possibilities and limitations of a product's life cycle, and of the role of products and our responsibility for the manufacturing and use of products. Students are expected to develop abilities to discuss social and economic aspects as well as environmental aspect important to a product's life cycle.

Upon completion of the course, students should be able to:
1. explain the life cycle of some selected products,
2. explain the chemical and chemical engineering problem arising in reflecting on the life cycle of some selected products from a sustainability perspective,
3. analyse how chemical and chemical engineering principles can be used to address issues related to some selected products' life cycles,
4. plan, conduct and present a project orally and in writing according to instructions and within given timeframes,
5. review and give feedback to oral and written presentations.

Content
The course covers factors of importance to a product's life cycle in a sustainability perspective:

- choosing raw materials
- studying the production process
- assuring the quality of the process and the final product
- analysing the product development potential
- studying how the product is used
- studying the recycling and disposal of the product.

The course is divided into three parts.
Part 1 treats a forest industrial product, for example, paper, cellulose and textile raw material.
Part 2 treats a chemical product, for example, pharmaceuticals, food, and plastic.
Students must meet the requirements regarding learning outcomes 1-3 and part of 5. Outcomes are assessed in groups for Part 1 and individually for Part 2.

Part 3 involves a project in which each student choose a product and apply knowledge from the first part of the course to describe a product's life cycle. Students work in groups. Learning outcomes 1-5 must be met for a Pass grade. At the mandatory presentation, students are acquainted with each others' projects which means that they learn about the life cycles in many product areas. Performing as a peer reviewer means that each student, in addition to their own project, get detailed knowledge of a second area.

Reading List
See separate document.

Examination
Assessment is based on:
-active participation at 80% of seminars
-group hand-in assignments
-individual hand-in assignments
-giving feedback according to instructions
-mandatory attendance at project presentations
-written and oral presentation of project
-peer reviewing of a fellow student's report and project presentation according to instructions

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

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.

KEGC61 and KEAD61 cannot be included in the same degree programme.