



Faculty of Health, Science and Technology
Chemical Engineering

Syllabus

Separation Processes

Course Code:	CKGB55
Course Title:	Separation Processes <i>Separationsprocesser</i>
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:
KTA (Chemical Engineering)

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2019-09-04, and is valid from the Spring semester 2020 at Karlstad University.

Prerequisites

Basic course in thermodynamics (7.5 ECTS credits) and Heat and mass transfer (7.5 ECTS credits), or equivalent

Learning Outcomes

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

- use material and energy balances as tools for analysing chemical engineering systems without chemical reactions,
- explain the most common unit operations and give examples of industrial processes in which each of the operations occur,
- apply the concept of phase equilibrium to the respective unit operation,
- describe the design of the equipment for performing the respective unit operation,

- evaluate the efficiency of existing process equipment,
- calculate the energy consumption of thermal separation processes, and predict the consequences of the different process designs for energy engineering.

Content

The course aims to introduce the most common unit operations in the chemical engineering industry, their industrial application areas, how they are dimensioned, and the physical and chemical principles on which they are based. Methods of calculating design parameters for equipment and degree of separation for the following separation methods are included: filtration, evaporation, dehydration, distillation, absorption, extraction, and leaching. Methods for calculating the energy consumption of evaporation, distillation, and dehydration are treated. The course also covers overview of process diagrams, material and energy flows, as well as phase equilibrium.

Instruction is in the form of lectures, calculation exercises, and laboratory sessions.

Reading List

See separate document.

Examination

Assessment is based on a written exam and reports on laboratory sessions according to instructions and submitted within a given time frame.

If students have a decision from Karlstad University entitling them to special pedagogical 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 U (Fail), 3 (Pass), 4 (Pass with Some Distinction), or 5 (Pass with Distinction) is awarded in the examination of the course.

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 course CKGB55 cannot be included in the same degree programme as CKGB4E and CKGB4A.

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