



Course syllabus

Enhetsoperationer för bioteknik- och livsmedelsindustrin Unit Operations in the Biotech and Food Industry

BLTF01, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED B/K

Date of Decision: 2023-04-18

General Information

Main field: Technology.

Compulsory for: B3

Elective for: K4, MLIV1

Language of instruction: The course will be given in English on demand

Aim

- synthesize and deepen knowledge from previous courses in the processing field, and get insights in how it can be applied on engineering problems of industrial relevance
- experience in applied experimental planning and experimental work on processing equipment
- experience in combining engineering theory, experimental investigations and mathematical modelling to solve engineering problems, with special emphasis on optimization of product quality, energy utilization and cost
- experience in project work, written as well as oral reporting
- deepen knowledge on unit operations of relevance for biotechnical and food processing.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- apply the principles of transport phenomena and mass and energy balances to analyse, design and optimize unit operations for food and biotech processing.
- have a basic knowledge in some unit operations important to the biotech and food industry.

Competences and skills

For a passing grade the student must

- be able to plan and perform experimental work on processing equipment.
- have the capability to combine theoretical and experimental methods to solve engineering problems of relevant unit operations.
- apply project team work for solving engineering problems of unit operations.

Judgement and approach

For a passing grade the student must

- be able to discuss the possibilities and limits of experimental and theoretical approaches for solving engineering problems
- be able to present, discuss and assess results in written form as well as oral to an audience of peers

Contents

This course is run mainly as a project laboratory (a process engineering assignment) that will be carried out by a project group. It will train the ability to solve a problem of industrial relevance using a combination of engineering theory, modelling and experimental work. The project work includes a literature survey, identification of relevant engineering theory, formulation of hypotheses, planning of experiments, experimental work, evaluating the experimental data in the light of engineering theory and reporting.

Attendance is mandatory at the first class, the first group meeting and project presentation.

Much of the course will be in the form of a project performed by a self-steering project group. Each group will have an advisor supporting the group. Further support, in solving the project task as well as in reaching the learning outcomes in general, is provided through a series of lectures and/or workshops. Peer assessment is an integrated part of the project work.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Written exam. Active participation in project work, opposition and

graded written report. Participation in mandatory group seminars and lectures. The grade is based on the grade on the written report.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0123. **Name:** Engineering Project.

Credits: 6. **Grading scale:** TH. **Assessment:** Active participation in project work, presentation, interim written reports, and graded written final report.

Code: 0223. **Name:** Written Examination.

Credits: 1,5. **Grading scale:** UG. **Assessment:** Individual written exam

Admission

Admission requirements:

- KETF01 Transport Phenomena, Basic Course or KLGN20 Food Engineering

Assumed prior knowledge: FMAA01 Calculus in One Variable FMA430 Calculus in Several Variables

The number of participants is limited to: 70

Selection: Completed university credits within the programme. Priority is given to students enrolled on programmes with the course listed as mandatory, and subsequently to students from programmes that include the course in their curriculum.

The course overlaps following course/s: BLT010, BLT015

Reading list

- On line course library, handouts.

Contact and other information

Course coordinator: Andreas Håkansson, andreas.hakansson@food.lth.se

Course homepage: <https://www.ple.lth.se/en/>