



Faculty of Health, Science and Technology
Chemical Engineering

Syllabus

Pulp and Paper Technology

Course Code:	KTAD02
Course Title:	Pulp and Paper Technology <i>Massa- och Pappersteknik</i>
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:
KTA (Chemical Engineering)

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2024-08-27, and is valid from the Spring semester 2025 at Karlstad University.

Prerequisites

150 ECTS credits completed in the Master programme in Chemical Engineering, including Separation Processes, 7.5 ECTS credits, and registered for Forest bioeconomy - processes, energy and products, 15 ECTS credits, plus upper secondary level English 6

Learning Outcomes

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

1. give an account of the production of chemical and mechanical pulp,
2. identify and describe the parts of a pulp mill,
3. identify and describe the parts of different types of paper and cardboard machines,
4. carry out calculations for components, process conditions, and product properties, based on scientific data,
5. justify the selection of raw materials and manufacturing processes for paper and cardboard production in order to achieve product-specific properties,

6. describe processes for collecting, processing, and using recycled fibre and reflect upon social aspects of sustainable systems for material use,
7. identify and explain the purpose of common methods for analysing pulp and paper, and use those methods,
8. analyse how additives used in paper and cardboard production can be linked to product properties, driveability, energy consumption, and environmental impact,
9. discuss how the Swedish forest industry works with gender equality, sustainability, and work environment issues, and
10. plan and conduct a project, within given time limits, and present it orally and in writing.

Content

The course includes several components, focused on for instance pulp or paper technology, as well as laboratory work, a literature study, written and oral presentations, and peer response on literature assignments.

The following topics are covered in the course:

Fibre raw materials, the production of chemical and mechanical pulp, pulp processing, different paper and cardboard machines, product properties and how these are affected by the process, raw materials and additives, methods for analysing pulp and paper, driveability and energy consumption as a consequence of additives, environmental impact and sustainable development, gender equality in the forest industry.

Reading List

See separate document.

Examination

Assessment is based on:

- an individual written exam
- active participation in laboratory sessions
- written group presentation of laboratory work in accordance with instructions
- an individual literature assignment, presented orally and in writing, and peer review

If students have a decision from Karlstad University entitling them to Targeted Study 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 Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. Engineering students are awarded a grade on the scale 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.