



# SD2415 Process Modelling for Composite Manufacturing 6.0 credits

## Processmodellering för kompositillverkning

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

The course syllabus is valid from Spring 2022 according to the school principal's decision: S-2022-0529 Decision date: 2022-02-24

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

## Specific prerequisites

SD2410 or SD2414

English B / English 6

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

The course aims to provide the basic knowledge required to describe and model the physical parameters governing manufacturing of fibre composites and experience of experimental design to verify developed models.

After finished course the participant should be able to:

- describe the physical phenomena and material properties which actively affect manufacturing of composite materials
- extract and use information from scientific literature
- describe the most important process parameters and manufacturing processes using basic physical laws and constitutive equations
- perform relevant simplifications of laws and equations in order to develop simplified models
- implement and develop models in suitable code (MATLAB or FEM) and perform simulations
- design experiments for model verification
- analyse experimental results and make conclusions on the validity and accuracy of the developed models
- use developed models for basic process optimisation

## Course contents

Introduction to process modelling, matrix flow, cross-linking, viscosity, permeability, Darcy's law, drapability, heat transfer modelling, numerical implementation, experimental verification and validation.

## Examination

- LAB1 - Laboratory Work, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 2.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

## Other requirements for final grade

Assignment (LAB; 4 university credits) and  
written exam (TEN; 2 university credits)

## **Ethical approach**

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.