



## COURSE SYLLABUS

# Materials in Design, 7.5 credits

*Konstruktionsmaterial, 7,5 högskolepoäng*

---

<b>Course Code:</b> TKMR22	<b>Education Cycle:</b> Second-cycle level
<b>Confirmed by:</b> Dean Mar 1, 2021	<b>Disciplinary domain:</b> Technology
<b>Revised by:</b> Director of Education Sep 21, 2022	<b>Subject group:</b> MA2
<b>Valid From:</b> Jan 1, 2023	<b>Specialised in:</b> A1N
<b>Version:</b> 5	<b>Main field of study:</b> Product Development

---

### Intended Learning Outcomes (ILO)

After a successful course, the student shall:

Knowledge and understanding

- display knowledge of advanced engineering materials and manufacturing processes
- display knowledge on the dependencies between material properties, manufacturing processes and product design
- demonstrate comprehension of product testing and certification

Skills and abilities

- demonstrate skills of selecting materials and production processes to fulfil requirements specifications of products.
- demonstrate the ability to propose a manufacturing process for a particular design and vice versa
- demonstrate skills in specifying products to direct user perception in given directions

Judgement and approach

- demonstrate the ability to understand the life cycle aspects of design, materials, and manufacturing processes
- demonstrate an understanding of the economical and sustainability impacts of product designs, materials, and manufacturing processes.

### Contents

The course is about engineering materials and their relation to manufacturing processes and product design.

The course includes the following elements:

- Traditional as well as new materials in relation to manufacturing processes
- Additive Manufacturing
- Material properties
- Product sustainability

- Product cost calculation
- Product standards and testing
- Product user experience and customer acceptance
- Product examples

### **Type of instruction**

Lectures, seminars and exercises.

The teaching is conducted in English.

### **Prerequisites**

Passed courses 180 credits in first cycle, at least 90 credits within the major subject Mechanical Engineering, Industrial Engineering and Management or Civil Engineering, and 15 credits in Mathematics. A bachelor level course in engineering materials or equivalent is required. Proof of English proficiency is required. (or the equivalent)

### **Examination and grades**

The course is graded 5,4,3 or Fail.

The final grade in the course is determined by weighing the grades from the project and the examination.

Registration of examination:

Name of the Test	Value	Grading
Examination	4 credits	5/4/3/U
Project	3.5 credits	5/4/3/U

### **Course literature**

The literature list for the course will be provided 8 weeks before the course starts.

Title: Materials Selection in Mechanical Design

Author: Michael F. Ashby

Publisher: Butterworth-Heinemann Ltd

ISBN: 9780081005996