COURSE SYLLABUS
Materials in Design, 7.5 credits

Konstruktionsmaterial, 7,5 högskolepoäng

Course Code:	TKMR22	**Education Cycle:**	Second-cycle level
Confirmed by:	Dean Mar 1, 2021	**Disciplinary domain:**	Technology
Revised by:	Director of Education Oct 25, 2023	**Subject group:**	MA2
Valid From:	Jan 1, 2025	**Specialised in:**	A1N
Version:	6	**Main field of study:**	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

The applicant must hold the minimum of a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in Mechanical Engineering, Industrial Engineering and Management, Civil Engineering (with relevant courses in construction), or equivalent. The bachelor's degree should comprise a minimum of 15 credits in mathematics and 7.5 credits in CAD, or equivalent. Proof of English proficiency is required.

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