



## COURSE SYLLABUS

# Sustainability in Product Development, 7.5 credits

*Hållbar produktutveckling, 7,5 högskolepoäng*

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<b>Course Code:</b> THUK19	<b>Education Cycle:</b> First-cycle level
<b>Confirmed by:</b> Dean <MISSING VALUE>	<b>Disciplinary domain:</b> Technology
<b>Valid From:</b> Jan 1, 2019	<b>Subject group:</b> MT1
<b>Version:</b> 1	<b>Specialised in:</b> GIF
	<b>Main field of study:</b> Mechanical Engineering

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### Intended Learning Outcomes (ILO)

After a successful course, the student shall;

Knowledge and understanding

- demonstrate knowledge of tools for sustainability in product development
- demonstrate knowledge of certifications, the Machinery Directive, and CE marking
- demonstrate comprehension of the effects of requirements management on sustainability.

Skills and abilities

- demonstrating ability to work in a product development team (distributed methodology)
- demonstrating ability to analyze sustainability policies
- demonstrating ability to do life cycle analyses to assess the sustainability of products.

Judgement and approach

- demonstrating ability to motivate the usage of tools for product development to ensure economic, social and environmental sustainability
- demonstrating ability to judge and suggest actions to improve the sustainability of products
- show insight in the interests and expectations of different stakeholders on a product throughout its lifetime and afterwards with focus on users, producers and society.

### Contents

The course is divided in three parts:

In the introduction part the students focus on a known/real product. Knowledge is acquired by modelling the product in a CAD-system. In parallel the students learn how to manage product assemblies, how to distribute work, and how to understand the rationale behind the product.

In the second part the focus is on the quality of the product development process. The students learn about tools to ensure that the resulting products meets the specifications (from customer, laws, etc.).

In part three the focus is on ensuring sustainability in the product development process.

The course includes the following elements:

- Managing product assemblies
- Work distribution in product development
- Reversed engineering, in the meaning analyzing already existing products
- Quality Function Deployment (QFD)
- Failure Modes and Effects Analysis for design (DFMEA)
- Simplified Life Cycle Analysis
- Product Data Management (PDM) / Product Lifecycle Management (PLM)
- Requirements management
- Standards, Machinery Directive and CE marking
- Materials, Energy, and Toxicity (MET)- matrix
- The Eco strategy Wheel
- Sustainability policies

### **Type of instruction**

The course gives different perspectives on product development through guest lecturers from companies working knowledgeable with the current theme. Students complete exercises in groups related to the current theme.

The teaching is conducted in English.

### **Prerequisites**

General entry requirements and completed courses Machine elements, 6 credits and Manufacturing Technology, 6 credits (or the equivalent).

### **Examination and grades**

The course is graded Fail (U) or Pass (G).

The examination is done continually throughout the course by presenting the completed exercises orally and in written reports. To pass the examination, active group participation is required.

Registration of examination:

Name of the Test	Value	Grading
Report	6.5 credits	U/G
Presentation	1 credit	U/G

### **Course literature**

The literature is preliminary until one month before the course starts