



## COURSE SYLLABUS

### Innovativ och hållbar produktutveckling Innovative and Sustainable Product Development 7.5 credits (7,5 högskolepoäng)

**Course code:** MT1442

**Main field of study:** Mechanical Engineering

**Disciplinary domain:** Technology

**Education level:** First cycle

**Specialization:** GXX - First cycle, in-depth level of the course cannot be classified

**Language of instruction:** Swedish

**Applies from:** 2022-01-17

**Approved:** 2021-11-29

#### 1. Decision

This course is established by 2015-03-03. The course syllabus is approved by Head of Department of Mechanical Engineering 2021-11-29 and applies from 2022-01-17.

#### 2. Entry requirements

Experience as professional engineer or previous studies at university (or the equivalent).

#### 3. Objective and content

##### 3.1 Objective

In the course the student shall extend the own knowledge in mechanical applied subjects with knowledge of innovative product developing, project management, environmental/sustainable product development and integrated product development. In the course the student obtain knowledge in strategies, concepts and methods for product development and its origin as well as planning from proposed idea in outline construction stage to primary construction stage. The purpose of the course is also for the student to obtain basic tools for analysing different product alternatives from environmental, surroundings and customer demands.

##### 3.2 Content

Product development process:

- historic advances of product developing processes
- various theories describing the processes of product development
- work process for product development work

Innovation and product renewal:

- TIPS (Theory of Inventive Solving) and ARIZ (Algorithm for Innovative Problem Solving)
- conflict orientation and function analysis
- innovative standard solutions and innovative principles
- different creative techniques amongst others brainstorming, brain writing, morphological box
- database searching to find patented solutions to technical problems
- product protection or intellectual property law (patent, trade mark and design right)

Ecodesign:

- difference between Ecodesign and sustainable product development
- integration of environmental aspects in companies and in product development
- driving force/ barriers for environmental/ sustainable product development
- practise on various Ecodesign tools and methods

Project management:

- how to plan and run a project
- about different roles, team building and responsibility in a project
- time schedule and economic plan for a project work

#### 4. Learning outcomes

The following learning outcomes are examined in the course:

#### 5. Learning activities

During the course regular lectures are held and tutoring of assignments. Course literature with reading instructions is

introduced early in the course together with important concepts, perspective and questions of issues as product development, innovative techniques, Ecodesign and project management. Collaboration, critical thinking and argumentation are practised in connection with presentation of assignments. The course participants get feedback on assignments from tutors continuously during the course to support the participants in their learning.

## 6. Assessment and grading

Modes of examinations of the course

Code	Module	Credits	Grade
I310	Assignment 1	1.5 credits	AF
I320	Assignment 2	1.5 credits	AF
I330	Assignment 3	3 credits	AF
I340	Assignment 4	1.5 credits	AF

The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Fail, supplementation required, F Fail.

If grade Fx are given, the student may after consultation with the course coordinator / examiner get an opportunity to within 6 weeks complement to grade E for the specific course element.

The information before a course occasion states the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

An examiner can, after consulting the Disability Advisor at BTH, decide on a customized examination form for a student with a long-term disability to be provided with an examination equivalent to one given to a student who is not disabled.

## 7. Course evaluation

The course evaluation should be carried out in line with BTH:s course evaluation template and process.

## 8. Restrictions regarding degree

The course can form part of a degree but not together with another course the content of which completely or partly corresponds with the contents of this course.

## 9. Course literature and other materials of instruction

Ottosson, S. (2012). Dynamisk Produktutveckling. Tervix AB. ISBN: 9789163081743

Thorpe, A. (2007). The designer's atlas of sustainability. ISBN: 9781597261005.

Eklund, S. (2011). Arbeta i projekt : individen, gruppen, ledaren. ISBN: 9789144072753.

Reference literature

Karl T. Ulrich, Steven D. Eppinger (2014). Produktutveckling : konstruktion och design (2014) /; översättning: Silvia Bengtsson (eller engelska version)

Lewis, H., & Gertsakis, J. (2001). Design + environment: A global guide to designing greener goods (1st ed.). Greenleaf Publishing. <https://doi.org/10.4324/9781351282208>. BTH library: <https://tinyurl.com/ybcvwwzd>

Övriga lärresurser

Under kursen utdelat material.