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## COURSE SYLLABUS

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### Hållbar produktutveckling

### Sustainable Product Development

### 7.5 credits (7,5 högskolepoäng)

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**Course code:** SL2543

**Main field of study:** Strategic Leadership towards Sustainability

**Disciplinary domain:** Technology

**Education level:** Second cycle

**Specialization:** AIN - Second cycle, has only first cycle course/s as entry requirements

**Subject area:** Industrial Engineering and Management

**Language of instruction:** The course is taught primarily in English, but teaching in Swedish may occur.

**Applies from:** 2019-09-02

**Approved:** 2019-03-01

#### 1. Decision

This course is established by Dean 2018-12-06. The course syllabus is approved by Head of Department of Strategic Sustainable Development 2019-03-01 and applies from 2019-09-02.

#### 2. Entry requirements

Admission to the course requires completed at least 6 credits in a basic course in strategic sustainable development, such as the course Sustainability basics, completed at least 2 credits in basic understanding of product development and 1 credits in sustainability analysis in product development, for example from the course Innovative and sustainable product development.

#### 3. Objective and content

##### 3.1 Objective

Building on their knowledge and skills from previous courses, students will learn how to (1) perform sustainability analysis in product development and (2) generate ideas for improvement based on the analysis. They will learn (3) advantages and disadvantages of various approaches to the above and (4) how to integrate these approaches into concept development. Competence in sustainable product development is in demand in industry and society. The course develops theoretical understanding and applied skills at the intersection of two of BTH's areas of expertise – sustainability and product development.

##### 3.2 Content

Students will learn to apply strategic sustainability thinking and some selected supporting approaches, methods and tools to analyse and iteratively improve the sustainability performance of product concepts during the concept development phase of a product innovation process.

#### 4. Learning outcomes

The following learning outcomes are examined in the course:

##### 4.1 Knowledge and understanding

On completion of the course, the student will be able to:

- apply Ecological Life-Cycle Assessment (LCA) to analyse and compare ecological sustainability performance and identify opportunities for improvement of product concepts.
- apply social LCA to analyse and compare social sustainability performance and identify opportunities for improvement of product concepts.
- apply design for recycling as an example of how to generate ideas for improved sustainability performance of a given product concept.
- propose materials for a material choice gate decision and justify why the choice likely leads to increased (ecological and social) sustainability performance.
- compare the approaches, methods and tools included in the course in order to identify their advantages and disadvantages and describe how they can be integrated into the concept development phase.

##### 4.2 Competence and skills

On completion of the course, the student will be able to:

- perform the sustainability analysis (above) even with limited information.
- use analysis results to critically explain the sustainability performance of a product system.
- communicate analysis results in writing, in English, and include arguments for choice of scope and assumptions made.
- foster team success by setting teamwork goals, peer-mentoring, building upon strengths, and overcoming weaknesses.

#### 4.3 Judgement and approach

On completion of the course, the student will be able to:

- identify own need for further knowledge in sustainable product development.

#### 5. Learning activities

Students will learn through a combination of project-based learning, reading and lectures or seminars.

#### 6. Assessment and grading

Modes of examinations of the course

Code	Module	Credits	Grade
1910	Project assignment 1	3 credits	AF
1920	Project assignment 2	1 credits	AF
1930	Project assignment 3	2.5 credits	GU
1940	Written assignment 1	0.5 credits	AF
1950	Written assignment 2	0.5 credits	GU

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

Project assignment 1: Ecological LCA assignment.

Project assignment 2: Social LCA assignment.

Project assignment 3: Material choice decision assignment.

Written assignment 1: Integrating into product development.

Written assignment 2: Personal development.

All examination tasks must be passed to receive a pass grade for the whole course. The course grade will be calculated by weighting together all assignments that are graded A-E based on the credits that the assignments are worth.

The course information for each course revision should include the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

#### 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

Material kommer att tillhandahållas via lärplattformen.