



## Course syllabus

Faculty of Technology

Department of Mechanical Engineering

4MT321 Hållbar produktion, 7.5 credits

Sustainable Production

### **Main field of study**

Mechanical Engineering

### **Subject Group**

Mechanical Engineering

### **Level of classification**

Second Level

### **Progression**

A1N

### **Date of Ratification**

Approved 2019-06-10

Revised 2020-03-27 by Faculty of Technology. Literature list is revised.

The course syllabus is valid from spring semester 2020

### **Prerequisites**

General entry requirements for secondcycle studies and specific entry requirements:

- 22,5 credits in Algebra and Analysis
- English B/6 or the equivalent.

## Objectives

After the course, the students should be able to:

- describe the concept of sustainable production from an industrial operations perspective
- describe sustainability aspects in industrial production based on the environment, social and economic viewpoints
- explain and report on technological methods in manufacturing and their impact on sustainable production
- report on industrial manufacturing and how it meets sustainability aspects
- evaluate and account for simulation-based methods such as modelling, simulation and analysis of systems and processes in manufacturing and make suggestions to improvements from a sustainability and life cycle perspective

## Content

The course deals with sustainability aspects and the way they affect industrial production, with specific focus on industrial manufacturing. The course contains the following elements:

- Sustainability and life cycle concepts in relation to industrial production
- Sustainable supply chains and concepts such as circular systems, remanufacturing, etc.
- Modern concepts in production systems such as Industry 4.0, robotics and autonomous system
- Methods for the modelling and design of production systems, including simulation for optimization from a sustainability perspective

## Type of Instruction

The teaching consists of lectures, exercises and laboratory work. Participation in laboratory work is mandatory.

## Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The course is examined through a written exam, laboratory work and exercises. Written exam uses the grading scale A-F. Moreover, approved parts in laboratory work and exercises are needed to pass the course.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customized exam or to have the student conduct the exam in an alternative way.

## Course Evaluation

During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

## Required Reading and Additional Study Material

Glenn Johansson, Erik Sundin, Magnus Wiktorsson: Sustainable Manufacturing, Studentlitteratur, 2019, ISBN 978-91-44-12054-6, 183 pages.

In addition, other material, such as scientific articles, will be made available through MyMoodle.