



*Course syllabus*

# Hållbara tillverkningsystem, fortsättningskurs Sustainable Manufacturing Systems, Advanced Course

**MMTN06, 7,5 credits, A (Second Cycle)**

**Valid for:** 2023/24

**Faculty:** Faculty of Engineering, LTH

**Decided by:** PLED M

**Date of Decision:** 2023-04-11

## General Information

**Compulsory for:** MPRR1

**Elective for:** I4-pr, M4-prr

**Language of instruction:** The course will be given in English

## Aim

This course will enhance the understanding of the important links that exist between technology, economy and sustainability, providing know-how to apply economic conditions as an instrument for production and formulation of a production development strategy for a given section of a manufacturing system. Further, the course will make clear the interdependence of product development including materials, production processes and sustainable manufacturing systems.

## Learning outcomes

### *Knowledge and understanding*

For a passing grade the student must

- Master and apply the basic economic theory for the development of production strategies.
- Master the principles for calculating the cost of a production section where all essential factors are considered and be aware of the various indicators that describe a production system's performance.
- Master the management and adaptation of the collected production data for

economic models.

- Be able to describe the tools and principles for continuous production development based on the concept of amongst others Lean Production and the Next Step.
- Be aware of the demands of sustainable manufacturing systems.
- Have knowledge and understanding of how to evaluate various manufacturing systems.

#### *Competences and skills*

For a passing grade the student must

- Be able to financially analyze and propose ways of development for different production scenarios.
- In practice plan, establish and implement a systematic production analysis including statistical analysis of obtained results.
- Be able to assess different types of production systems in a technical and economic perspective and from an overall perspective of sustainability.

#### *Judgement and approach*

For a passing grade the student must

- Be able to analyze a production scenario and suggest development opportunities and improvements.

## Contents

The course further clarifies the important link that exists between economics, technology and sustainability. The course focuses on applying the knowledge gained from previous courses, e.g. Sustainable manufacturing systems (MMTN31). Furthermore, the course provides in-depth knowledge of key figures (KPIs), sustainability follow-up, financial analysis of balancing losses, optimal staffing and optimal automation level. In-depth studies are also carried out within statistical analyzes of production data for assessment of various manufacturing systems from a production production performance point of view, primarily based on quality and delivery reliability with the aim of developing adequate development opportunities. In-depth study in the form of a study in a current area within production development, production and material development or industrial sustainability.

## Examination details

**Grading scale:** TH - (U,3,4,5) - (Fail, Three, Four, Five)

**Assessment:** Written home examination and written and oral assignments.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

## Admission

#### **Admission requirements:**

- MMT045 Flexible Manufacturing Systems or MMTN30 Flexible Manufacturing Systems or MMTN31 Sustainable Manufacturing Systems

**Assumed prior knowledge:** MMT012/MMTF20 Production and Manufacturing Methods or MMTA05 Production Systems or similar.

**The number of participants is limited to:** No  
**The course overlaps following course/s:** MMTN05

## Reading list

- Ståhl, Jan-Eric, Windmark Christina: Sustainable Production System , – the link between technology and economy with a global perspective. 2022. And material handed out by the department.

## Contact and other information

**Course coordinator:** Christina Windmark, [christina.windmark@iprod.lth.se](mailto:christina.windmark@iprod.lth.se)  
**Course homepage:** <http://www.iprod.lth.se>