# Production Systems

Programme course

6 credits

Produktionssystem

TMPS27

Valid from: 2017 Spring semester

**Determined by**
Board of Studies for Mechanical Engineering and Design

**Date determined**
2017-01-25

## Main field of study
Mechanical Engineering

## Course level
Second cycle

## Advancement level
A1X

## Course offered for
- Design and Product Development
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- Mechanical Engineering, M Sc in Engineering
- Mechanical Engineering, Master's programme

## Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

## Prerequisites
Manufacturing engineering/technology

## Intended learning outcomes
The course is designed to build on a customer-centered perspective, understanding and skills to meet future industrial situation. By working in an industrial project the students will be trained to identify and analyze problems based on given conditions in an actual industrial context.
After the course the student should:

- have insight how manufacturing equipment, handling equipment and control technology are utilized for the design and operation of flexible manufacturing systems, also, taking into account the interaction between man and machine.
- be able to use concepts and models for analysis of production systems with consideration to product development and production strategy.
- be able to design production systems for various industrial needs. In the context of a small project engineering team discuss and argue for the selected solutions for a production system design.

# Course content

The course covers various types of production systems and for which such industrial applications as they are most prevalent. We will examine how the different processing methods, production equipment, handling equipment and control technology work together with respect to product, machine and man.
The theoretical part includes, for example:

- The main types of production systems in the form of multi-purpose workshops, product workshops and general production workshops
- Automated lines, functional design, NC shops, FMS, etc
- New production system concepts in the form of mass-customization, individualized production
- Methods to achieve flexibility
- Production of carbon fibre composit products
- "New" production philosophies applied to the machines in the production system.

# Teaching and working methods

The course consists of lectures, seminars, industrial study visits and industrial project.
The course consists of several different types of elements or parts with the overall goal of combining theory with practical training. Through an applied small project carried out at industrial companies, the students will carry out a study related to a design of a production system. The project groups will be working with different types of problems. These will be discussed during seminars that will provide a wider and deeper understanding of the whole. The project team will present the project results, verbally and in a report, in a concise way, adequately and clearly.

# Examination

| | | | |
|---|---|---|---|
| UPG2 | Project assignment | 2 credits | U, G |
| TEN2 | Written examination | 4 credits | U, 3, 4, 5 |

Examination by individual exam and in group seminars and oral and written presentation of a project.
Compulsory attendance is required to pass at the project seminars and project accounting.

# Grades

Four-grade scale, LiU, U, 3, 4, 5

# Other information

Supplementary courses: Mechanical Engineering - Project Course

## Department
Institutionen för ekonomisk och industriell utveckling

## Director of Studies or equivalent
Mats Björkman

## Examiner
Mats Björkman

## Course website and other links
http://www.iei.liu.se/indprod/grundutbildning/tmps27?l=sv

## Education components
Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

## Course literature
Kopior på de Power point presentationer som används under lektioner och föreläsningar. Dessa finns att ladda ner från kursens hemsida En referensbok i form av: Mikell P. Groover, Automation, Production Systems, and Computer-Integrated Manufacturing. Pearson, 2008, Rapid Plant Assessment artikel samt material

# Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.