



## Course syllabus

Faculty of Technology

Department of Mechanical Engineering

2MT005 Lean Production, 7,5 högskolepoäng

2MT005 Lean Production, 7.5 credits

**Main field of study**

Mechanical Engineering

**Subject Group**

Mechanical Engineering

**Level of classification**

First Level

**Progression**

G2F

**Date of Ratification**

Approved 2013-03-12

Revised 2022-11-21 by Faculty of Technology. Literature list is revised.

The course syllabus is valid from autumn semester 2023

**Prerequisites**

60 credits in the subject Mechanical Engineering including Production Technology, 7.5 credits, Quality Management, 7.5 credits, Engineering Economics, 7.5 credits or equivalent must be included.

## Objectives

After completing the course, the student must:

- Understand the approach that governs the development of the lean production concept
- Be able to apply the methods needed to establish a Lean culture
- Understand the difficulties and opportunities of introducing new ways of working

## Content

- The Principles of Lean
- The methods and toolbox within Lean
- Production flow analysis, simulation and optimization theory – all at the basic level

- Introduction to modern concepts such as Industry 4.0, robotics, automation

## Type of Instruction

The teaching consists of lectures, laboratory sessions and exercises. Some elements are mandatory. The scope of the mandatory parts will be announced at the beginning of the course.

## Examination

The course is assessed with the grades U, 3, 4 or 5.

Assessment of students' performance usually takes place during special examination periods and is in writing. For a pass grade, approved laboratory sessions are required.

The assessment of the course is divided into the following parts:

- Exam, 5 credits (U,3,4,5)
- Project and laboratory, 2.5 credits (U/G)

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 customised 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.

## Credit Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 2MT032, 2.5 credits

## Required Reading and Additional Study Material

### Required Reading

Bellgran, Monica, and Kristina Säfsten. Production Development: Design and Operation of Production Systems. New York ; London: Springer, 2014. Print. ISBN: 9781447157496. 340 pages

### Reference Literature

Dennis, Pascal. Lean Production Simplified: A Plain language Guide to the World's Most Powerful Production System. Third ed. New York: Productivity, 2016. Print. ISBN: 9781498708876. 223 pages

Brailsford, Sally, Churilov, Leonid, and Dangerfield, Brian. Discrete Event Simulation and System Dynamics for Management Decision Making. New York: John Wiley Sons, Incorporated, 2014. ISBN: 9781118349021. 360 pages

Glenn Johansson, Erik Sundin, Magnus Wiktorsson: Sustainable Manufacturing, Studentlitteratur AB, 2019, ISBN 9789144120546, 183 pages.

Lundgren, Jan, Mikael Rönnqvist, and Peter Värbrand. Optimization. 1st ed. Lund: Student literature, 2010. Print. ISBN: 9789144053103. 260 pages

Course materials distributed through MyMoodle (scientific articles and reports).