



**LUNDS UNIVERSITET**  
Lunds Tekniska Högskola

*Course syllabus*

# **Kvalitetsstyrning**

## **Quality Management**

**MION50, 7,5 credits, A (Second Cycle)**

**Valid for:** 2023/24

**Faculty:** Faculty of Engineering, LTH

**Decided by:** PLED I

**Date of Decision:** 2023-04-14

### **General Information**

**Elective Compulsory for:** MLOG2

**Elective for:** I5-pr, I5-lf, M5-lp

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

### **Aim**

To do right things and to do things right is key to all industrial enterprises that wants to remain competitive. Customers and other stakeholders expect to get an offer corresponding to their needs and requirements. Customers also expect the supplier to realize the commitments according to contract. Society expects sustainability in many dimensions – reductions in the use of scarce resources, reuse and recycling of material and components, but also sustainability from a socio-economic perspective.

The purpose of this course is to provide the students with an understanding of governing principles and tools for successful Quality Management. This includes leveraging interrelations between customer needs and the enterprise's capability to develop new products and services, ability to use existing resources for producing products and services, and to listen to the voice of the customer and the society around the business.

Concrete objectives are to offer the students:

- an overview and understanding of the broad area of Quality Management, emphasizing fundamental principles and concrete tools for analysis and improvement
- an understanding of interrelations between daily operations and international standards for quality management

- knowledge of quantitative and qualitative tools in quality management and ability to apply them to measure/analyse/improve in DMAIC/Six sigma and LEAN, to estimate waste, improve processes, and review value chains.
- an understanding of connections between quality, sustainability, technical and business performance and financial results.
- tools and skills for developing and improving quality.

## Learning outcomes

### *Knowledge and understanding*

For a passing grade the student must

- have a comprehensive understanding of the governing principles for successful Quality Management
- have an understanding of reliability analysis and factorial design
- be able to explain and use methods for statistical process control and for process capability assessment
- have knowledge about tools for collection, analysis and visualization of information
- be able to explain the significance of quality assurance in manufacturing and logistics, in purchasing, all baset customer´s needs requirements as well as guidelines from international standadrs as ASME, PED, DOSH
- have a comprehensive understanding about quality management in product /goods as well as in service.
- have knowledge about continual improvements in the context of LEAN and six sigma
- be able to analyze and explain a company´s interaction with the environment and society from a sustainability point of view

### *Competences and skills*

For a passing grade the student must

demonstrate ability too:

- perform factorial design of experiments
- apply reliability techniques on complex products and systems
- calculate control charts, estimate capability, and propose extended control activities
- use different quality tools for data gathering, analysis and visualization
- apply quality management principles and tools in manufacturing and service production
- describe and explain continual improvements in the context of LEAN and six sigma

The student is expected to use established concepts and terminology to communicate problem formulations, solutions and interpretation of quantitative models. When the course is completed, the student will be able to independently study literature in the area and extend his or her knowledge of the quality management field.

## Contents

The course content is described by the purpose and learning outcomes above.

## Examination details

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

**Assessment:** The performance assessment is based on a written final exam and compulsory group assignments. The assignments are examined through written reports and oral presentations.

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.

### Parts

**Code:** 0115. **Name:** Quality Management.

**Credits:** 7,5. **Grading scale:** TH.

**Code:** 0215. **Name:** Assignments.

**Credits:** 0. **Grading scale:** UG.

## Admission

### Admission requirements:

- FMSF80 Mathematical Statistics Basic Course (or equivalent)

**Assumed prior knowledge:** MIOA01/MIOA12/MIOA15 Managerial Economics Basic Course

**The number of participants is limited to:** No

**The course overlaps following course/s:** MIO060, MION35

## Reading list

- Foster, S Thomas: Managing Quality, Integrating the Supply Chain. 6th global edition Pearson, 2017.
- Selection of scientific articles recently published to illustrate state of science and relevant applications in companies and other organisations.
- Webb pages like [isixsigma.com](http://isixsigma.com), [ifm.eng.cam.ac.uk/dctools](http://ifm.eng.cam.ac.uk/dctools), [asq.org](http://asq.org), [itl.nist.gov/div898/handbook](http://itl.nist.gov/div898/handbook), with aim to develop the private tool box.
- Course compendium.

## Contact and other information

**Course coordinator:** Professor Johan Marklund, [Johan.Marklund@iml.lth.se](mailto:Johan.Marklund@iml.lth.se)

**Teacher:** Bertil Nilsson, [Bertil.Nilsson@iml.lth.se](mailto:Bertil.Nilsson@iml.lth.se)

**Course homepage:** <http://www.pm.lth.se>

**Further information:** The course can not be combined with MION35