



## COURSE SYLLABUS

# Lean and Six Sigma for Sustainable Operations, 15 credits

*Lean and Six Sigma for Sustainable Operations, 15 högskolepoäng*

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<b>Course Code:</b> TLXS22	<b>Education Cycle:</b> Second-cycle level
<b>Confirmed by:</b> Dean Mar 1, 2022	<b>Disciplinary domain:</b> Technology
<b>Revised by:</b> Director of Education Oct 20, 2022	<b>Subject group:</b> IE1
<b>Valid From:</b> Aug 1, 2023	<b>Specialised in:</b> A1F
<b>Version:</b> 2	<b>Main field of study:</b> Production Systems

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### Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding

- display knowledge of the application of Lean and Six Sigma principles contributing to sustainable operations in organizations
- display knowledge of Lean and Six Sigma applications with regards to practices and tools
- demonstrate comprehension of synergies between various methodologies within Quality Management

Skills and abilities

- demonstrate skills of collaboration in teams for a Six Sigma project
- demonstrate the ability to apply Lean and Six Sigma principles, practices, and tools towards sustainable operations

Judgement and approach

- demonstrate the ability to understand and judge the applicability of Lean and Six Sigma as improvement and problem-solving methodologies
- demonstrate an understanding of Six Sigma project management towards sustainable operations

### Contents

This course covers the two topics of lean and six sigma. Separate and combined.

The course includes the following elements:

- Define-Measure-Analyze-Improve-Control (DMAIC) and related cycles
- Six Sigma principles
- Lean principles and tools
- Toyota Production System
- Variation management

- Descriptive and inferential statistics
- Data visualization and Minitab
- Six Sigma for sustainability
- Scoping tool, SIPOC
- Six Sigma certification and organization

### **Type of instruction**

The teaching consists of lectures, seminars, and exercises. The course requires completion of a Six Sigma project under the supervision of allocated teachers.

The teaching is conducted in English.

### **Prerequisites**

Passed courses of at least 90 credits within the major subject industrial engineering and management, mechanical engineering, civil engineering, computer engineering (or the equivalent), and 15 credits in mathematics, and completed course Developing Sustainable Supply Chain Operations, 7.5 credits or equivalent. Proof of English proficiency is required.

### **Examination and grades**

The course is graded 5,4,3 or Fail.

The final grade for the course is based upon a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Mid-term Exam	3 credits	5/4/3/U
Final Exam	3 credits	5/4/3/U
Seminars	1.5 credits	U/G
Six Sigma Project	7.5 credits	5/4/3/U

### **Course literature**

The literature list for the course will be provided one month before the course starts.

The details will be provided upon decision:

2 course books for Lean and Six Sigma

1 Six Sigma Pocketbook

Journal articles

Business cases