



## 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 Nov 15, 2024	<b>Subject group:</b> IE1
<b>Valid From:</b> Aug 1, 2025	<b>Specialised in:</b> A1F
<b>Version:</b> 3	<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**

The applicant must hold the minimum of a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) in engineering or technology. The bachelor's degree should comprise a minimum of 15 credits in mathematics, and taken course Developing Sustainable Supply Chain Operations, 7.5 credits or the 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