JÖNKÖPING UNIVERSITY
School of Engineering

COURSE SYLLABUS

Lean and Six Sigma for Sustainable Operations, 15 credits

Lean and Six Sigma for Sustainable Operations, 15 högskolepoäng

Course Code:	TLXS22	Education Cycle:	Second-cycle level
Confirmed:	May 01, 2025	Disciplinary domain:	Technology
Valid From:	Sep 01, 2025	Subject group:	Industrial Engineering and Management
		Specialised in:	A1F Second cycle, has second-cycle course/s as entry requirements
		Main field of study:	Production Systems

Intended Learning Outcomes (ILO)

On completion of the 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

Content

This course covers two topics, lean and Six Sigma, separately and in combination.

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.

Language of instruction is in English.

Entry requirements

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 U.

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	G/U
Six Sigma Project	7.5 credits	G/U

Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.

The details will be provided upon decision:

1 course book for Six Sigma
1 Six Sigma Pocket Toolbook
Various journal articles