UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Industrial Systems Philosophies A1N

6 credits

Course code: VP703A
Version number: 9
Valid from: 1 January 2026
Ratified by: Curriculum Committee for Engineering Science
Date of ratification: 22 May 2025

1. General information about the course

The course is provided by the University of Skövde and is named Industrial Systems Philosophies A1N (Industriella systemfilosofier A1N). It comprises 6 credits and is a second-cycle course. The level of progression is A1N.

The course is a part of the main field of study in Virtual Product Realization. It can also be a part of the main field of study in Informatics. The disciplinary domain of the course is Technology.

2. Entry requirements

A Bachelor's degree equivalent to a Swedish kandidatexamen of 180 credits, within the main fields of integrated product development, production engineering, automation engineering, mechanical engineering or information technology (or the equivalent).

A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as the Swedish course English 6 or English level 2 (or the equivalent). This is normally demonstrated by means of an internationally recognized language test, e.g. IELTS or TOEFL.

3. Course content

The course provides a deeper understanding of the currently prominent production philosophies such as Lean, the Theory of Constraints, and the Toyota Production system, among others. The importance and use of simulation for successfully implementing production philosophies are also discussed in this course. The course also reviews the evolution of industrial production systems from the first to the fourth industrial revolution and the ongoing changes related to the need for increased sustainability.

Similarities and differences in how the different production philosophies support this evolution and the mechanisms they use to achieve efficient and sustainable production systems are some of the key learning objectives of the course.

This course also provides knowledge on the importance of lean thinking in the product design and development phase. The course also discusses the significance of integration of production and product design.

4. Objectives

After completed course the student should be able to:

- summarize and discuss important milestones in the development of industrial production systems,
- describe and discuss today's prominent production philosophies, and distinguish and contrast their similarities and differences,
- explain and discuss the impact of the product development process on the production process, including the related sustainability concerns,
- explain and discuss the impact of product development process on the production process, including the impact on sustainability,
- explain and discuss the importance and challenges of sustainable production to the future of manufacturing industries.

5. Examination

The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

Attendance on seminars is compulsory.

The examinations of the course consist of the following modes of assessment:

- **Written assignment**
  2 credits, grades: A/B/C/D/E/F (determines the final grade)
- **Group assignment**
  1 credit, grades: G/U
- **Seminar assignment**
  3 credits, grades: G/U

Students with a permanent disability who have been approved for directed educational support may be offered adapted modes of assessment.

6. Types of instruction and language of instruction

The teaching is comprised of lectures, group assignments, presentations and seminars/group discussions.

The teaching is conducted in English.

7. Course literature and other educational materials

Bicheno, J. & Holweg, M. (2008). *The Lean Toolbox: the essential guide to Lean transformation* (4th ed). PIC SIE Books. ISBN 9780954124458.

Goldratt, E. & Cox, J. (2012). *The Goal: A process of ongoing improvement*. North River Press. ISBN 9780884271956.

Ohno, T. *Toyota Production System*. Productivity Press. ISBN 9780915299140.

Pessôa, M. V. P., & Trabasso, L. G. (2016). *The Lean Product Design and Development Journey: A Practical View*. Springer. ISBN 9783319467924.

Research papers and other reading material and will be provided by the instructor.

8. Student influence

Student influence in the course is ensured by means of course evaluation. The students are informed about the results of the evaluation and potential measures that have been taken or are planned, based on the course evaluation.

9. Additional information

Further information about the course, as well as national and local governing documents for higher education, is available on the website of the University of Skövde.