JÖNKÖPING UNIVERSITY
School of Engineering

COURSE SYLLABUS

Sustainable Production Development, 7.5 credits

Hållbar produktionsutveckling, 7.5 högskolepoäng

Course Code:	THPR25	Education Cycle:	Second-cycle level
Confirmed:	Feb 01, 2025	Disciplinary domain:	Technology
Valid From:	Sep 01, 2025	Subject group:	Mechanical Engineering
		Specialised in:	A1N Second cycle, has only first-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

- demonstrate comprehension of content and structure of a production system
- demonstrate comprehension of production system development approaches
- demonstrate comprehension of operations and manufacturing strategies
- demonstrate comprehension of how production systems are realized and deployed through the whole life cycle from a circular perspective

Skills and abilities

- demonstrate skills of describing, defining, and comparing production systems based on changeability concepts
- demonstrate skills of evaluating various production system development approaches

Judgment and approach

- demonstrate the ability to explain, evaluate and compare production system designs and their suitability for different production situations
- demonstrate the ability to evaluate sustainability principles in production development.

Content

This course introduces key concepts and principles to support sustainable production development. A central theme is the design of production systems that can respond quickly to changes in product requirements and market demand while minimizing waste and resource use.
The course explores operations and manufacturing strategies, emphasizing their role in driving sustainable practices and long-term competitiveness for companies. It also covers methods and frameworks for developing production systems that balance efficiency, flexibility, and sustainability.
Lean production principles are integrated, highlighting continuous improvement and the reduction of environmental impact. Circularity principles in production development and strategies for creating closed-loop systems are key components, ensuring production processes contribute to a more sustainable future.

The course includes the following elements:

- Formulations and usage of operations and manufacturing strategies and how it affects the business in manufacturing companies
- Lean production
- Design of production systems supporting a proactive mindset
- Production system design and layout

- Changeable and reconfigurable production system development
- Sustainability and circularity in production systems
- Various technological choices' impact on the production system
- Evaluation of production systems

Type of instruction

Lectures, seminars and exercises.

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) with at least 90 credits in Mechanical Engineering, Industrial Engineering and Management, Civil Engineering. The bachelor's degree should comprise a minimum of 15 credits in mathematics. Proof of English proficiency is required (or the equivalent).

Examination and grades

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

Registration of examination:

Name of the Test	Value	Grading
Examination [1]	4 credits	5/4/3/U
Seminar	1.5 credits	G/U
Assignment	2 credits	G/U

[1]Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

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

Title: Introduction to Manufacturing, An industrial engineering management perspective
Authors: M. Baudin and T Netland
ISBN-13: 9780815363194