



KTH Industriell teknik
och management

Course Memo ML2300 HT22

Course name: Sustainable Production

Course code: ML2300

HP/ECTS:	9
Teachers:	Magnus Wiktorsson (magwik@kth.se) Seyoum Eshetu Birkie (seyoume@kth.se) (course responsible) Jannicke Hauge (jmbh@kth.se) Emma Lindahl (emlindah@kth.se)
Industry engagement:	Study visit: Scania (<i>subject to availability</i>) Guest lectures from industry (AstraZeneca) and Industry case (Scania)
Examiners:	Magnus Wiktorsson; Seyoum Eshetu Birkie
Grading:	A-F
Language:	English
Target group:	Students enrolled in Sustainable Production Development, TITHM, year 1; students taking the course as elective

Background and course learning objectives

Background

This is the first course in the programme that form the basis for the subject areas that are dealt with in the programme. The course includes following main subject areas:

- Dynamics in value creation and sustainability
- Theory and practice of sustainable production
- Planning, operation, and evaluation of sustainable production system
- Environmentally conscious process design
- Relation between the product, the production and the supply chains for sustainable production
- Selected subjects in sustainable production: production management for sustainable Production / The role of logistics in sustainable production / Industrial operational

reliability and robustness for sustainable production / The relation between production and circular economy: Material flow and energy flow

Students shall communicate their understanding of the subject matter through formative and summative assessments: oral presentation, written project reports, as well as providing logically coherent reflections in written exam.

Course learning objectives (Intended Learning Objectives)

- ILO1. Describe how the different subject areas production management, production logistics and industrial operational reliability relate to sustainable production development.*
- ILO2. Account for motives, driving forces and obstacles for sustainable production.*
- ILO3. Explain and analyse the sustainable production system where environmental aspects and other sustainability aspects have connections to the system components and relations.*
- ILO4. Evaluate, analyse and compare alternatives for development of production, considering economic, environmental and social sustainability, based on established methods and tools.*
- ILO5. Relate a sustainable production to sustainability aspects regarding product supply chains and transport.*
- ILO6. Discuss the role of production for an increased life-cycle perspective and circular material and energy flows.*

Mode of delivery

The course is offered in a blended mode of online and on campus (face-to-face) activities. Teaching learning moments include lectures, seminars, exercises, as well as industry visits. Guest lectures are held on selected topics.

Further details about modes of are specified in the course schedule. For likely future changes on modes of delivery, students are advised to follow up KTH updates as well as information published in the course webpage in Canvas.

There are mandatory sessions that all students are required to attend and complete activities of at least sessions marked as mandatory in order to be eligible for course grading.

Zoom shall be a main platform for online sessions. Link can be found in the course canvas page as well as in the course detailed schedule.

Course assessment

INL1 (A-F, 3 hp). Group assignment. Case-based and continuous in the course with written hand-in and presentation.

- Please refer to project description provided separately.
- Grading criteria for the project tasks is provided with the project description.

ÖVN1 (P/F, 3hp). Three assessment moments with preparatory tasks for each.

- Literature and seminar tasks in 2 sessions (ÖVN1.1, ÖVN1.2) and seminars with simulated games (ÖVN1.3) focusing on different production management, production logistics and sustainability topics.
- Oral discussion with individual tasks. Active participation and *attendance mandatory*.
- Participation in additional mandatory sessions as specified in the course schedule.
- All three exercises need to be marked as pass to get a pass grade in ÖVN1.

TEN1 (A-F, 3hp). Final examination to assess theoretical understanding.

- There will be closed book final examination (Digital format in computer lab). Specific details of exam shall be provided later.

Grading criteria

The overall grading of the course shall be a combination of INL1 and TEN1 according to the combination rule provided in the table below. Students need to have a pass grade in ÖVN1 in order to have a final course grade.

<i>ILOs</i>	<i>INL1</i>	<i>TEN1</i>	<i>ÖVN1</i>
ILO1		X	X
ILO2		X	
ILO3	X		
ILO4	X		
ILO5		X	X
ILO6		X	X

	<i>INL1</i>				
<i>TEN1</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
A	A	A	B	C	D
B	B	B	B	C	D
C	B	C	C	C	D
D	C	C	D	D	E
E	D	D	D	E	E

Course literature

Johansson, G., Sundin, E., Wiktorsson, M. (2019). Sustainable Manufacturing, Studentlitteratur (main literature).

Bellgran, M., and Säfssten, K., (2010). Production development design and operation of production systems, Springer.

Belvedere, V., and Grando, A. (2017). Sustainable Operations and Supply Chain Management, Wiley.

* Additional relevant literature will provided later in the course.

Adapted examination for students with disabilities

The application for compensatory assistance in case of disability is made via KTH FUNKA, more information can be found via the link:

<https://www.kth.se/en/student/studentliv/funktionsnedsattning/stod-for-studenter-med-funktionsnedsattning-1.39736>

For students with disabilities who have a statement from KTH's FUNKA unit on recommended support measures in the examination, the following applies in this course:

All support actions under code R (i.e. adjustments relating to space, time and physical circumstances) are granted without special decision by the examiner

Support measures under code P (educational adaptation) must be actively granted or rejected by the examiner after contact has been made by the student in accordance with KTH's rules.

Normally, support actions under code P will also be approved.