



# ML1619 Industrial Maintenance and Reliability 9.5 credits

Industriellt underhåll och driftsäkerhet

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

Course syllabus for ML1619 valid from Autumn 2024

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

First cycle

## Main field of study

Mechanical Engineering

## Specific prerequisites

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

# Intended learning outcomes

After passing the course, the student should be able to:

1. give an account of basic principles of industrial maintenance and operational reliability
2. give an account of and use sustainability related concepts and tools based on different models, perspectives and definitions (e.g. Agenda 2030, circular economy and climate modelling)
3. identify and give an account of safety aspects and risks for operation of technical production system
4. describe, compare and analyse technical solutions in production systems based on environmental impact and sustainability
5. choose appropriate manufacturing processes from context and have understanding of which possibilities and limitations they have
6. draw conclusions on and argue for how and from which materials existing products are produced, as well as explain how environmental and economic aspects influence this
7. independently and in a structured way create parameterised part models, assembly models of part models, mechanism models with animation, simple dimensioned detail drawings and assembly drawings with exploded views and parts lists in a modern CAD system
8. carry out simple programming and control of microcomputer/PLC
9. in a group carry out an independent project work that results in a functioning technical system; in this is also included to be able to plan a project and carry out/follow up a project plan
10. reproduce and describe a project work in a written report and create presentation material and report orally in front of a group

## Course contents

- The course gives basic knowledge in industrial maintenance and operational reliability
- The course gives specialised knowledge in industrial technology and production, industrial manufacturing processes and industrial materials science, and in sustainable development for industrial production
- Introduction to how technical production system can be analysed is evaluated and improved based on an environment and sustainability perspective
- Systems introduction, part modelling and assembly modelling in a modern 3D CAD system, including documentation of detail and assembly drawings
- Introduction to technical programming, PLC and microcomputers
- Examine aspects around industrial production, maintenance and operational reliability

- Introduction of a project work model, group project and basic project knowledge

## Examination

- LAB1 - Laboratory work 1, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB2 - Laboratory work 2, 1.0 credits, grading scale: P, F
- LAB3 - Laboratory work 3, 1.0 credits, grading scale: P, F
- PRO1 - Project, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM1 - Seminars, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM2 - Seminars, 1.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.