



ML2307 Theory of Science and Research Methodology in Sustainable Production Development 6.0 credits

Vetenskapsteori och forskningsmetodik i Hållbar produktionsutveckling

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

Establishment

On 15/10/2019, the Dean of the ITM School has decided to establish this official course syllabus to apply from spring term 2020 (registration number M-2019-2075).

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed courses:

ML2300 Sustainable Production, ML2301 Production Management and Development, ML2305 Production Logistics and Supply Chains, and ML2306 Industrial Analytics for Advanced Manufacturing, or the equivalent courses

Language of instruction

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

Intended learning outcomes

On completion of the course, the students should be able to:

- reflect on what science is, underlying ideas and concepts of different paradigms that are applicable in academic studies of sustainable production development
- explain and apply scientific methods and methods and technologies for scientific writing relevant for a degree project at second cycle level in sustainable production development
- design and formulate a plan for a degree project at second cycle level and identify appropriate methodology relevant for a problem in sustainable production development
- apply the knowledge in scientific writing and research methodology and use the knowledge to write a scientific report and a peer review report
- make assessments with respect to ethical aspects and sustainability aspects in the area of sustainable production development.
- Analyse and critically evaluate the value and the reliability of empirical and theoretical studies and the latest development in production development and sustainability, with a focus on the contribution from research to both academia and practice
- explain and apply different research traditions that are relevant for studies in production development and sustainability

Course contents

This course gives the students an overview of aspects concerning theory of knowledge and the current development tracks in production development, with a focus on sustainability aspects.

The students are prepared to independently be able to carry out a degree project at second cycle level based on a scientific methodology. The students are trained to apply concepts, methods and critical arguments through a multitude of activities, based on discussion, analysis of current scientific studies, and preparation of a framework for minor studies, that can be further developed within the scope of the degree project.

The course includes the following themes:

- theory of knowledge, classification of research and research processes
- the scientific research process and applicable methods
- design of investigations and studies according to different scientific approaches

- examination and critical review of existing literature, including source criticism, plagiarism and written argumentation and identification of a research gap in selected sub-domains of the research field.
- planning and design of a degree project at second cycle level, including theoretical problem formulation of industrial problems, and choice of method.
- develop, present and argue for a work plan (proposed degree project), both in writing and orally.
- ethical issues in production development research.

Examination

- PRO1 - Project, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM1 - Seminar presentation, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- INL1 - Assignment, 1.0 credits, grading scale: P, 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.

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

Examiner decides, based on recommendation from KTH Royal Institute of Technology's coordinator for disabilities about possible adapted examination for students with documented, permanent disabilities. The examiner may permit other examination formats at the re-examination of individual students.

Other requirements for final grade

Attendance at specified compulsory course dates (or completed compensation assignment to these) are requirements for final grading.

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.