



Programme syllabus

[An accessible version of the syllabus can be found in the Course and programme directory.](#)

Master's Programme, Sustainable Production Development, 120 credits 120 credits

Masterprogram, hållbar produktionsutveckling

Valid for students admitted to the education from autumn 20 (HT - Autumn term; VT - Spring term).

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

Programme objectives

Based on the objectives specified in the Higher Education Ordinance, the overall objectives of the master's program Sustainable Production Development are described below.

Knowledge and understanding

A graduate from the master's programme shall:

- Demonstrate knowledge and understanding within mechanical engineering and sustainable production development, its scientific base and proven experience within these areas.
- Demonstrate broad knowledge within mechanical engineering and deeper knowledge of sustainable production development, focusing on production management, production logistics and industrial dependability. This includes general design and development, analysis, operation, and optimization of production systems.
- Demonstrate insight into current research and development work within these areas.
- Demonstrate in-depth knowledge within methodology in mechanical engineering and sustainable production development.

Skills and abilities

A graduate from the master's programme shall:

- Demonstrate the ability to critically, independently and creatively identify, formulate and manage complex issues with a holistic viewpoint.
- Demonstrate the ability to plan and adequately implement qualified tasks within the given scope.
- Demonstrate the skills required to participate in research and development work and thereby contribute to the development of knowledge, or to independently work in other qualified engineering activities and to evaluate this work.
- Demonstrate the ability to critically and systematically integrate knowledge as well as demonstrate ability to analyse, assess and manage complex phenomena, issues and situations, even with limited information.
- Demonstrate the ability to teamwork and collaborate in groups of different composition.
- Demonstrate the ability, in both national and international contexts, to express and discuss in a clear and written manner conclusions and the knowledge and arguments that underlie them in dialogue with different groups.

Ability to make judgements and adopt a standpoint

A graduate from the master's programme shall:

- Demonstrate the ability to make assessments in the field of mechanical engineering and sustainable production development with regard to relevant scientific, social and ethical aspects as well as show awareness of ethical aspects in research and development.
- Demonstrate insight into the possibilities and limitations in science, in general and more specifically in sustainable production development, its role in society and people's responsibility for how it is used, including social and economic aspects, and environmental and work environment aspects.
- Demonstrate the ability to identify his/her need for additional knowledge and to take responsibility for his/her ongoing knowledge development.

Extent and content of the programme

The programme comprises 120 credits, which corresponds to 2 years of full-time studies. The programme is in the second cycle and the language of instruction is English.

Eligibility and selection

Eligibility for the Master's Programme in Sustainable Production Development requires general entry requirements corresponding of:

- a Bachelor of Science within engineering of at least 180 credits, or an equivalent qualification.
- English skills equivalent to English B/English 6.

Required special qualifications are a technical bachelor's degree with specialisation in one of the fields: mechanical engineering, industrial engineering, supply chain management, industrial management, design and product development, vehicle engineering, sustainable development, information and communication technology, computer science and engineering, or corresponding field.

A basic course in industrial or production engineering, including systems engineering, production systems and operations management, is however required to fulfil the specific requirements.

The selection process is based on the following criteria: university and credits awarded (e.g. grades and university ranking), relevance for the education (number of subject courses and relevant work experience) and motivation for the studies (e.g. letter of motivation and references). The assessment of qualifications scale is 1-75.

Implementation of the education

Structure of the education

Every academic year comprises two semesters of 20 weeks each. Every semester is divided into two periods.

Structure of the programme

The programme starts with compulsory package of courses that gives a solid base within the area of Mechanical Engineering and Sustainable Production Development.

The following two semesters consists of compulsory courses and optional courses.

The final semester's studies comprise a degree project.

Courses

The programme is course-based. Lists of courses are included in appendix 1.

The programme is course-based.

The compulsory courses are defined for each year. The goals, entrance qualifications, content and course requirements for each course can be found in the official course syllabuses.

The type of instruction and examination format varies between the courses and these are indicated in each official course syllabus.

The optional courses can be chosen from KTH's range of offered courses. Credits from courses at other universities/higher education institutions can also be transferred.

The following limitations apply to the optional courses:

- there is a limit imposed on the number of credits that may be chosen per semester
- an optional course may not correspond to a significant extent to an existing programme course or an already credited course
- higher education preparatory courses may not be counted as optional courses

Grading system

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

Conditions for participation in the programme

Participation requires admission to courses within the programme and course registration.

For continued studies there are specific admission requirements for the courses. Admission requirements are specified in the course syllabus.

Degree project

Degree project, second cycle

The programme includes a degree project for a Degree of Master that comprises 30 credits and which is usually done during spring semester of year 2.

The degree project is the finishing part of the programme. The degree project can be started when the special requirements are fulfilled.

Degree

Conditions for a Degree of Master, 120 credits

A Degree of Master of Science is obtained after completing the degree programme. The programme is designed so that the student, when they graduate, has fulfilled the national qualification requirements with a passing grade in all courses included in the student's study plan of 120 credits whereof a 30 credit degree project in second cycle is included.

Optional preparatory courses and introductory courses cannot be included as part of the degree.

Courses whose content overlaps one or more other courses in the programme cannot be counted as part of the 120 credits that form the basis for the degree.

Title of general qualification at second cycle

Degree of Master of Science (120 credits)

Teknologie masterexamen

Appendix 1 - Course list

Appendix 2 - Programme syllabus descriptions



Appendix 1: Course list

Master's Programme, Sustainable Production Development, 120 credits (TITHM)

General courses

Year 1

Mandatory courses (48.0 Credits)

Code	Name	Credits	Edu. level
ML2300	Sustainable Production	9.0 hp	Second cycle
ML2301	Production Management and Development	9.0 hp	Second cycle
ML2302	Modelling, Simulation and Optimization of Sustainable Production	9.0 hp	Second cycle
ML2303	Digitalisation for Sustainable Production	9.0 hp	Second cycle
ML2305	Production Logistics and Supply Chains	6.0 hp	Second cycle
ML2306	Industrial Analytics for Advanced Manufacturing	6.0 hp	Second cycle

Optional courses

Code	Name	Credits	Edu. level
ML2304	Sustainable Development in Industry	6.0 hp	Second cycle

Year 2

Mandatory courses (51.0 Credits)

Code	Name	Credits	Edu. level
ML2307	Theory of Science and Research Methodology in Sustainable Production Development	6.0 hp	Second cycle
ML2308	CDIO course in Sustainable Production Development	15.0 hp	Second cycle
ML230X	Degree Project in Sustainable Production Development, Second Cycle	30.0 hp	Second cycle



Appendix 2: Specialisations

Master's Programme, Sustainable Production Development, 120 credits (TITHM)

This programme has no specialisations.