



Programme syllabus

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

Master's Programme, Integrated Product Design 120 credits

Masterprogram, integrerad produktdesign

Valid for students admitted to the education from autumn 21 (HT - Autumn term; VT - Spring term).

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

Programme objectives

Integrated Product Design (IPD) is a two-year Master's Programme with the goal of training engineers who, in today's highly competitive and fast changing global market, require advanced knowledge and highly developed skills in how to develop competitive and sustainable products in multidisciplinary teams.

Knowledge and understanding

Graduates from Integrated Product Design shall, within the area of industrial design engineering or the organisation and management of innovation and product development:

- demonstrate knowledge of the fields' scientific foundation and proven experience
- demonstrate in-depth insight into current research and development

- demonstrate advanced methodological knowledge

Skills and abilities

Graduates from Integrated Product Design shall, within the area of industrial design engineering or the organisation and management of innovation and product development:

- demonstrate the ability to search for, gather and integrate knowledge and identify their need for additional knowledge while applying a holistic, critical and systematic approach
- demonstrate the ability to identify, analyse, assess and handle complex phenomena, issues and situations, even with limited information
- demonstrate the ability to plan and, using adequate methods, carry out skilled tasks within a given timeframe and evaluate this work
- demonstrate the ability to develop and evaluate products, systems, methods or technical solutions with respect to people's circumstances and needs, as well as society's goals in terms of economically, socially and ecologically sustainable development
- demonstrate the capacity, both orally and in writing, in dialogue with different groups, to clearly account for and discuss their conclusions and the knowledge and arguments on which these are based
- demonstrate the ability to make assessments with regard to relevant scientific, societal and ethical aspects
- demonstrate the skill required to participate in research and development work or to work independently in other advanced contexts
- demonstrate the ability to take responsibility for planning and organising, and implement innovative product development projects in teams

Ability to make judgements and adopt a standpoint

- demonstrate the ability to make assessments of the possibilities and limitations of technology with respect to relevant scientific, environmental, human, societal, ethical and economic aspects
- demonstrate initiative and innovation in utilising the extraordinary opportunities technology brings in order to create a more humane and sustainable society
- have a good understanding of the inherent complexity of technical systems and of the fact that the process of developing them is often incompletely defined and involves conflicting requirements and expectations
- demonstrate the ability to identify their need of further knowledge and to continuously develop their skills

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 mostly English.

The programme level is primarily second cycle, and within the programme the student specialises within one of two different areas: industrial design engineering or the organisation and management of innovation and product development. This means that the programme is divided into two tracks, one of which is to be specified as the student's intended specialisation in their application:

- Industrial Design Engineering
- Innovation Management and Product Development

Eligibility and selection

Eligibility for both tracks (Industrial Design Engineering and Innovation Management and Product Development) within the Master's Programme Integrated Product Design requires a relevant Higher Education Diploma of at least 180 ECTS credits, within Mechanical Engineering or equivalent. General requirements include: Mechanical Engineering: Mechanics, Solid Mechanics, Thermodynamics, Electrical Engineering, Machine Elements, Manufacturing Technology, 3D-CAD, Product Development and Engineering Design.

Applicants to the Industrial Design Engineering Track must also have good knowledge in Industrial Design Engineering: Ergonomics, Design Processes, Materials, Sketching, Rapid Prototyping, and Digital 3D-visualisation. English 6/B.

In addition to the above, eligibility for the track Industrial Design Engineering also requires the following knowledge within both mechanical engineering and industrial design:

- Mechanical engineering: mechanics, solid mechanics, thermodynamics, electrical engineering, machine elements, manufacturing technology, 3D-CAD, product development and engineering design.
- Industrial design: ergonomics, the design process, material selection, sketching, design, rapid prototyping and digital 3D visualisation.

The selection process is based on the following criteria: university, credits awarded (e.g. grades, grades in specific subjects and English), motivation for the studies (for instance, letter of motivation, references, courses and relevant professional experience). The assessment of qualifications scale is 1-75.

The selection is also based on the design portfolio for - track Industrial Design..

Implementation of the education

Structure of the education

Academic year

Each academic year consists of two semesters which are 20 weeks each. Each semester is divided into two study periods.

Courses

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

The programme is structured in the form of courses. Course lists are found in appendix 1.

The programme consists of compulsory, conditionally elective, recommended and optional courses. The compulsory courses are defined for each year and track/profile in course lists. 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 vary 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 if the qualification requirements are met.

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
- Optional courses may be chosen freely but should be relevant to the professional role of engineer.

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.

Grading scale is found in the course syllabus.

Conditions for participation in the programme

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

For studies at a higher study year 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, of which

- at least 90 credits are attained in the second cycle, which includes at least 60 credits (including a 30 credit degree project) of specialised studies within the programme's main field of study.

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, Integrated Product Design
(TIPDM)

Track, Industrial Design Engineering (IPDC)

Year 1

Mandatory courses (54.0 Credits)

Code	Name	Credits	Edu. level
MF2032	Eco Design	6.0 hp	Second cycle
MF2039	Advanced Service Design	9.0 hp	Second cycle
MF2086	Research Methodology in Management and Organization <i>Alt. can MF2072 be chosen in year 2, period 2</i>	6.0 hp	Second cycle
MF2101	Machine Design	6.0 hp	Second cycle
MF2102	Machine Design Project Course	6.0 hp	Second cycle
MF2104	Mechatronic in Product Design	6.0 hp	Second cycle
MF2112	Advanced Product Design	12.0 hp	Second cycle
MF2114	Design for Sustainability	3.0 hp	Second cycle

Supplementary information

MF2086 "Research Methodology in Management and Organization" 6cr. is mandatory alternative can MF2072 "Research Methodology in Machine Design" 6cr. be chosen in year 2, period 2.

MF2114 "Design for Sustainability" 3cr. replaces MF2097 "Advanced Sketch Exercises" 3cr.

Year 2

Mandatory courses (42.0 Credits)

Code	Name	Credits	Edu. level
MF2113	Advanced Industrial Design Engineering	12.0 hp	Second cycle
MF227X	Degree Project in Industrial Design Engineering, Second Cycle	30.0 hp	Second cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
MF2072	Research Methodology in Machine Design <i>Should be chosen if you did not take MF2086 in year 1</i>	6.0 hp	Second cycle

Supplementary information

**Course list: Information is based upon the curriculum for academic year 2021/2022.
Changes may occur.**

MF2086 "Research Methodology in Management and Organization" 6cr. is mandatory alternative can MF2072 "Research Methodology in Machine Design" 6cr. be chosen in year 2, period 2.

Track, Innovation Management and Product Development (IPDE)

Year 1

Mandatory courses (45.0 Credits)

Code	Name	Credits	Edu. level
MF2011	Systems Engineering	9.0 hp	Second cycle
MF2046	Product Innovation	6.0 hp	Second cycle
MF2084	Managing Research and Development	6.0 hp	Second cycle
MF2085	Innovation- and Product Development Processes	6.0 hp	Second cycle
MF2086	Research Methodology in Management and Organization	6.0 hp	Second cycle
MF2101	Machine Design	6.0 hp	Second cycle
MG2020	Modularisation of Products	6.0 hp	Second cycle

Year 2

Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
MF2087	Innovation Management - Theory and Practice	7.5 hp	Second cycle
MF2088	Innovation and Product Development	22.5 hp	Second cycle
MF230X	Degree Project in Innovation Management and Product Development, Second Cycle	30.0 hp	Second cycle

Supplementary information

Course list: Information is based upon the curriculum for academic year 2021/2022. Changes may occur.



Appendix 2: Specialisations

Master's Programme, Integrated Product Design (TIPDM)

Track, Industrial Design Engineering (IPDC)

No information entered.

Track, Innovation Management and Product Development (IPDE)

No information entered.