



Programme syllabus

Master's Programme, Integrated Product Design, 120 credits

Masterprogram, integrerad produktdesign

120.0 credits

Valid for students admitted to the education from autumn 14 (HT - Autumn term; VT - Spring term).

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

Programme objectives

A graduate from the Integrated Product Design programme must:

Knowledge and understanding

- demonstrate knowledge of scientific background and proven experience in the area of innovation and product development;
- have good insight into current research and development work, and be able to use research results in industrial design, integrated product development or innovation;
- develop a deep understanding of innovation and product development processes, be able to use different methods and tools and critically analyze their usefulness;
- have good knowledge of the interactive features of technical products and the interaction between technical systems, financial systems, man and the surrounding environment;
- have good knowledge of techniques to develop ecologically and economically sustainable products;
- have a good foundation in the natural and engineering sciences, with specialization at an advanced level in either industrial design engineering, integrated product development or product innovation.
- assess and analyze design aspects in relation to corporate objectives, market conditions and user needs;
- have a basic knowledge of research methodology.

Skills and abilities

- show the ability to carry out an innovative and professional product development work
- be able to handle fundamental tools for communication, visualisation and prototype development
- be able to take responsibility for planning, organisation, and implementation of efficient product development project work and teamwork

Ability to make judgements and adopt a standpoint

- demonstrate the ability to assess the potential and limitations of technology with regard to relevant scientific, environmental, human, social, ethical and economic aspects;
- demonstrate initiative and innovation to take advantage of exceptional opportunities for achieving a more humane and sustainable society;
- have a good understanding of the inherent complexity of technical systems and an awareness that the process of developing them is often incompletely defined, with conflicting demands and desires;
- develop an ability to identify the need for further knowledge and be able to continuously upgrade their skills.

KTH's local degree ordinance can be found in KTH's guidelines www.kth.se

Extent and content of the programme

The programme comprises 120 higher education credits which correspond to two years of full-time study. The programme is primarily in the second cycle and starts once per year.

Selectable tracks within Integrated Product Design are:

- Industrial Design
- Integrated product development
- Product Innovation

The language of instruction for the programme is English.

Eligibility and selection

To be eligible for this Masters program candidates require a relevant education, preferably in Mechanical Engineering, equivalent to at least 180 credits, a Bachelor of Science degree or another recognised technical degree.

Similar engineering or science education at an undergraduate level can also be considered as an entry requirement, provided that the relevant courses in mechanical engineering and product development have been completed. Other studies or work experience are assessed based on the real skills and competencies acquired. For KTH English language masters programmes, there is a specific requirement for English B or equivalent.

The selection procedure for the program is based on an evaluation of the following criteria: university / college, grades, courses relevant to the application, the covering letter, work experience and references.

In general, please refer to the KTH admissions procedure as stated in the KTH rules, www.kth.se.

Implementation of the education

Structure of the education

Structure of the education

Study years, terms, and study periods are described in KTH's guidelines, www.kth.se

The programme starts with a common course package which is both a preparation for research and provides a solid base for the different specializations Industrial design, Integrated product development and Product innovation.

The programme is concluded with a degree project corresponding to 30 higher education credits in the second cycle during the fourth term.

Courses

The programme is course-based. Lists of courses are included in [appendix 1](#).

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

In order for a student to advance to its second academic year, he / she must have completed at least 45 credits during the first academic year until the last resit period before the second academic year begins.

Students who do not meet this requirement should arrange to meet with the counsellor at the ITM School Education Office to establish an individual study plan.

Course enrolment

Registration to all courses within the programme should be made during the preceding semester, in accordance with the KTH central guidelines.

Choice of Track

The choice of Track within the programme (Industrial Design Engineering, Integrated Product Development and Product Innovation) should be specified in the covering letter accompanying each student's application. Applicants should be aware that each Track may have core courses that require prerequisite knowledge, which may involve adaptation courses (see Appendix 1).

All Tracks offer valuable experience in project work:

the Industrial Design Engineering Track particularly focuses on expertise in ergonomics, visualization and communication, 3D modeling, as well as form and function;

the Integrated Product Development Track places special value on expertise in ergonomics, project management and organization;

whilst the Product Innovation Track will hone your expertise in business development, marketing and strategy.

Recognition of previous academic studies

Students have the possibility to apply for recognition of previous academic studies from course(s) at another higher education institution or university, both national and international.

KTH's entire policy for recognition of previous academic studies can be found in KTH's guidelines, www.kth.se

Studies abroad

The degree project can be carried out outside of Sweden with the examiner's approval.

Degree project

The degree project consists of 30 higher education credits in the second cycle.

A student must have completed at least 60 higher education credits, including obligatory courses for the chosen master's programme, before he/she can start his/her degree project.

The degree project work is graded according to the seven-level grading system, A-F.

KTH's rules for the degree project for Master's degrees with tracks can be found in KTH's guidelines, www.kth.se

Degree

In order to earn a Degree of Master of Science within Mechanical Engineering (Two Years), passing grades in all courses which are included in the student's study plan are required. The study plan must comprise 120 higher education credits which include a degree project consisting of 30 higher education credits, in the second cycle.

The student must apply for the degree and show his/her Bachelor Degree (or corresponding).

KTH's local degree ordinance can be found at www.kth.se

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Master's Programme, Integrated Product Design, 120 credits (TIPDM), Programme syllabus for studies starting in autumn 2014

Track, Concurrent Engineering (IPDB)

Year 1

Mandatory courses (57.0 credits)

Course code	Course name	Credits	Edu. level
MF2031	Advanced Prototyping	6.0	Second cycle
MF2032	Eco Design	6.0	Second cycle
MF2034	Integrated Product Development	6.0	Second cycle
MF2036	Integrated Product Development, Advanced Course	24.0	Second cycle
MF2051	R&D Strategy and Organization	6.0	Second cycle
MF2073	Research Methodology in Organisation and Management	9.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MF2006	Innovative Design II	6.0	Second cycle
MF2023	Industrial Design <i>NOT FOR CDEPR</i>	6.0	Second cycle
MF2038	Service Design	6.0	Second cycle
MF2046	Product Innovation	6.0	Second cycle
MG2020	Modularisation of Products	6.0	Second cycle

Supplementary information

2 of the Conditionally elective courses must be taken during year 1 or 2

MF2006

MF2023(CDEPR STUDENTS ARE NOT ALLOWED TO TAKE THIS)

MF2038

MG2020

MF2046

Year 2

Mandatory courses (54.0 credits)

Course code	Course name	Credits	Edu. level
MF2036	Integrated Product Development, Advanced Course	24.0	Second cycle
MF207X	Degree Project in Integrated Product Development, Second Cycle	30.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MF2006	Innovative Design II <i>2 courses must be taken during year 1 or year 2</i>	6.0	Second cycle
MF2023	Industrial Design <i>2 courses must be taken during year 1 or year 2 (not for CDEPR)</i>	6.0	Second cycle
MF2038	Service Design <i>2 courses must be taken during year 1 or year 2</i>	6.0	Second cycle
MG2020	Modularisation of Products <i>2 courses must be taken during year 1 or year 2</i>	6.0	Second cycle

Supplementary information

2 of the Conditionally elective courses must be taken during year 1 or 2

MF2006

MF2023(CDEPR STUDENTS ARE NOT ALLOWED TO TAKE THIS)

MF2038

MG2020

MF2046

Attn: Study year information concerning grading system

According to the President of the University's decision on July 1,2015, grades pass (P) and fail (F) will be used for the Master thesis. Students who have begun studies on July 1,2007, and through June 30,2015, also have the option to use the grading scale of A-F, for their Master thesis. Registration must be done before the course registration and before the thesis work starts.

Year 3

Track, Industrial Design Engineering (IPDC)

Year 1

Mandatory courses (45.0 credits)

Course code	Course name	Credits	Edu. level
MF2005	Innovative Design I	12.0	Second cycle
MF2031	Advanced Prototyping	6.0	Second cycle
MF2032	Eco Design	6.0	Second cycle
MF2033	Material, Environment and Economy	6.0	Second cycle
MF2060	Industrial Design Engineering Advanced Course, Part 1	12.0	Second cycle
MF2070	Introduction to Engineering Design	3.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MF2037	Human Product Interaction	6.0	Second cycle
MF2038	Service Design <i>Recommended to be taken during year 2</i>	6.0	Second cycle

Supplementary information

Students must choose between MF2038 and MF2037

Year 2

Mandatory courses (48.0 credits)

Course code	Course name	Credits	Edu. level
MF2061	Industrial Design Engineering Advanced Course, Part 2	12.0	Second cycle
MF2072	Research Methodology in Machine Design	6.0	Second cycle
MF210X	Degree Project in Industrial Design, Second Cycle	30.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MF2037	Human Product Interaction <i>One of these courses must be chosen</i>	6.0	Second cycle

Course code	Course name	Credits	Edu. level
MF2038	Service Design <i>One of these courses must be chosen</i>	6.0	Second cycle

Supplementary information

Students must choose between MF2038 and MF2037

Attn: Study year information concerning grading system

According to the President of the University's decision on July 1,2015, grades pass (P) and fail (F) will be used for the Master thesis. Students who have begun studies on July 1,2007, and through June 30,2015, also have the option to use the grading scale of A-F, for their Master thesis. Registration must be done before the course registration and before the thesis work starts.

Track, Product Innovation (IPDD)

Year 1

Mandatory courses (27.0 credits)

Course code	Course name	Credits	Edu. level
MF2031	Advanced Prototyping	6.0	Second cycle
MF2046	Product Innovation	6.0	Second cycle
MF2051	R&D Strategy and Organization	6.0	Second cycle
MF2073	Research Methodology in Organisation and Management	9.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MF2006	Innovative Design II <i>Profile: Machine Design. Student must choose one of the following: MF2024, MF2010 or MF2006</i>	6.0	Second cycle
MF2010	Component Design <i>Profile: Machine Design. Student must choose one of the following: MF2024, MF2010 or MF2006</i>	6.0	Second cycle
MF2011	Systems Engineering <i>Profile: Machine Design</i>	9.0	Second cycle
MF2019	CAD 3D-modelling and Visualization <i>Profile: Machine Design. Student must choose between MF2032 or MF2019</i>	6.0	Second cycle
MF2024	Robust and Probabilistic Design <i>Profile: Machine Design. Student must choose one of the following: MF2024, MF2010 or MF2006</i>	6.0	Second cycle
MF2032	Eco Design	6.0	Second cycle

Course code	Course name	Credits	Edu. level
	<i>Profile: Machine Design. Student must choose between MF2032 or MF</i>		
MG2009	Advanced Manufacturing Technology <i>Profile: Production: Student must between MG2010 and MG2009</i>	6.0	Second cycle
MG2010	Modern Industrial Metrology <i>Profile: Production: Student must between MG2010 and MG2009</i>	6.0	Second cycle
MG2020	Modularisation of Products <i>Technical profile: Production</i>	6.0	Second cycle
MG2028	CAD and Other IT Tools in Industrial Processes <i>Profile: Production: Student must between MG2028 and MG2130</i>	6.0	Second cycle
MG2130	Modelling and Simulation of Industrial Processes <i>Profile: Production: Student must between MG2028 and MG2130</i>	9.0	Second cycle
MJ1401	Heat Transfer <i>Technical profile: Energy. Recommended during year 3</i>	6.0	First cycle
MJ2380	Introduction to Energy Systems Analysis and Applications <i>Technical profile: Energy. Alternative 1</i>	9.0	Second cycle
MJ2407	Sustainable Energy Utilisation <i>Technical profile: Energy</i>	9.0	Second cycle
MJ2422	Thermal Comfort and Indoor Climate <i>Technical profile: Energy. Alternative 2(+ MJ2437)</i>	6.0	Second cycle
MJ2437	Modeling of Energy Systems - Energy Utilization <i>Technical profile: Energy. Alternative 2(+MJ2422)</i>	6.0	Second cycle

Supplementary information

CMAST and CDEPR students must choose between the following technical profiles:

Energy Engineering

Production Engineering

Machine Design

CMAST and CDEPR students are not allowed to take BOTH MF2019 and MG2028

Year 2

Mandatory courses (60.0 credits)

Course code	Course name	Credits	Edu. level
MF2052	Product Innovation Seminar Course	9.0	Second cycle
MF2078	Innovation, Product and Business Development	21.0	Second cycle
MF211X	Degree Project in Product Innovation Management, Second Cycle	30.0	Second cycle

Supplementary information

Attn: Study year information concerning grading system

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Year 3



Appendix 2: Specialisations

Master's Programme, Integrated Product Design, 120 credits (TIPDM), Programme syllabus for studies starting in autumn 2014

Track, Concurrent Engineering (IPDB)

Track, Industrial Design Engineering (IPDC)

Track, Product Innovation (IPDD)