

Master in Manufacturing Engineering, 120 HE credits

Master i tillverkningsteknik, 120 hp

Programme code: TATIK

Higher education qualification: Degree of Master of Science (120 credits) with a major in Mechanical Engineering

Cycle: Second cycle

Established: 2023-09-19

Established by: Department of Engineering Science

Applies for: Programme start autumn 2024

Entry requirements

Degree of Bachelor of Science in mechanical engineering, manufacturing engineering, industrial engineering, materials science and engineering or equivalent. The Bachelor of Science degree must be comprised of at least 7.5 HE credits of materials science and at least 15 credits of mathematics including basic knowledge of analysis, linear algebra and statistics. In addition, verified knowledge of English corresponding to the course English 6 in the Swedish upper-secondary level or equivalent.

Language of instruction

The teaching is conducted in English.

Other regulations

A student who has been admitted to a programme with this programme syllabus is guaranteed a place on courses according to the study plan below, provided that the student follows the programme according to the study plan. The study plan and its courses may however be subject to change, within the framework of the qualitative targets, when revisions of education plans and syllabi are being made. Should the programme involve choosing a specialization, the student is guaranteed a place on courses concerning the chosen specialization.

Qualitative target

National outcomes

Degree of Master (120 credits) [Masterexamen]

Scope

A Degree of Master (120 credits) is awarded after the student has completed the courses required to gain 120 credits with a defined specialisation determined by each higher education institution itself, of which at least 60 credits are for specialised study in the principal field (main field of study) of the study programme. In addition the prior award of a Degree of Bachelor, a Degree of Bachelor of Fine Arts, a professional or vocational qualification of at least 180 credits or a corresponding qualification from abroad is required. The requirement of the prior award of a qualification may be waived for a student admitted to the programme without the basic entry requirement in the form of a qualification. This does not, however, apply if a waiver was granted during admission pursuant to the second paragraph of Section 28 of Chapter 7 on the grounds that the qualification had not yet been issued.

Outcomes

Knowledge and understanding

For a Degree of Master (120 credits) the student shall

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills

For a Degree of Master (120 credits) the student shall

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
- demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work
- demonstrate the ability in speech and writing both nationally and internationally to clearly report and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- demonstrate the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

Judgement and approach

For a Degree of Master (120 credits) the student shall

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work
- demonstrate insight into the possibilities and limitations of research, its role in

- society and the responsibility of the individual for how it is used, and demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Independent project (degree project)

A requirement for the award of a Degree of Master (120 credits) is completion by the student of an independent project (degree project) for at least 30 credits in the main field of study.

The degree project may comprise less than 30 credits, however no less than 15 credits, if the student has already completed an independent project in the second cycle for at least 15 credits in the main field of study or the equivalent from a programme of study outside Sweden.

Miscellaneous

Specific requirements determined by the each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Master (120 credits) with a defined specialisation.

Courses that the study programme comprises

Course	Course code	HE credits	Level	Main field of study
Academic Writing	VSK600	3	A1N	Mechanical Engineering
Additive Manufacturing Processes	ADT610	7,5	A1N	Mechanical Engineering
Advanced Materials Science	AMT601	6	A1N	Mechanical Engineering
Computer Aided Manufacturing, CAM	CAB600	3	A1N	Mechanical Engineering
Machining	SKB603	6	A1N	Mechanical Engineering
Materials Characterization and Testing	MOP600	3,5	A1N	Mechanical Engineering
Non-Destructive Evaluation, NDE	OFP600	4	A1N	Mechanical Engineering
Surface Engineering	YTI600	7,5	A1N	Mechanical Engineering
Metallurgy of Welding and Additive Manufacturing	MTS600	7,5	A1F	Mechanical Engineering

Course	Course code	HE credits	Level	Main field of study
Thermal Spraying	TKS600	6	A1F	Mechanical Engineering
Welding Processes	SVP700	6	A1F	Mechanical Engineering
Master's Thesis in Mechanical Engineering	EXM720	30	A2E	Mechanical Engineering

Optional courses within programme

Among the courses on the programme, there are 30 HE credits in optional courses. You can choose from the courses below or you can take courses at another institution of higher learning, either in Sweden or abroad, provided that the subject is relevant to the programme and that the course objectives do not overlap with the courses within the program. To determine whether a course is relevant for the education or not, the student needs to apply for a pre-approval (förhandsbesked) of the course selection and have it accepted by the programme coordinator before taking the course.

The programme has the following recommended courses. Students are guaranteed a place in all these recommended courses. However, according to the first paragraph, these courses can be replaced with other optional courses.

Course	Course code	HE credits	Level	Main field of study
Statistical process control and Design of experiments	SPF610	7,5	A1N	
Industrial Placement	INP600	15	A1F	Mechanical Engineering
Process Simulation and Modeling	POM600	7,5	A1F	Mechanical Engineering

Description of compulsory courses

The study path presents the order and weeks courses in the programme are given. To see the programmes preliminary study path, enter the programme name / programme code at hv.se/en/student/studies/program-and-course-information/study-path/.

Entry requirements within the programme

- For admission to the course Industrial Placement, 15 HE credits, a completed result of 40 HE credits within the programme is required.
- For admission to the course Master's Thesis in Mechanical Engineering, 30 HE

credits, a completed result of 60 HE credits within the programme is required.

Work Integrated Learning (WIL)

Work-Integrated Learning (WIL) has been a part of University West ever since it was founded and is our overarching profile. Our programmes, research, and collaborations all feature a WIL element, and it permeates all that we do here. Together with our collaborators, who come from private, public, and civic areas of society, we develop and exchange knowledge that will lead to a sustainable world. As a student at University West, you will encounter work-integrated learning in several ways. This may be, for example, in the classroom or lecture hall, in your practical work, or in something you are involved in outside of the university setting. WIL clearly integrates theory and practice. The advantage of WIL is that you earn an academic degree while also gaining work experience, make contacts, and acquire practical competence. You are better equipped for employment, and are prepared for life-long learning, new insights, and cutting-edge research. WIL is part of our programmes and takes on various forms as we continue to develop our methods of integrating theory and practical knowledge.