Master in Robotics and Automation, 120 HE credits

Master i robotik och automation, 120 hp

Programme code: TARAU
Higher education qualification: Degree of Master of Science (120 credits) with specialization in Robotics and Automation
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 computer engineering, electrical engineering, mechanical engineering or Industrial Engineering and Management. Additionally the Bachelor of Science degree must be comprised of a minimum of 5 HE credits in programming and 15 HE credits in mathematics. Verified knowledge of English corresponding to the course English 6 in the Swedish Upper Secondary School (high school) 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.

HÖGSKOLAN VÄST

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
Mechatronics for Automation	MFA600	3,5	A1N	Automation, Production Technology
Programming for Automation	PFA600	4	A1N	Computer Engineering
Robot Certificate	RBK600	1,5	A1N	Automation, Mechanical Engineering, Production Technology
Robot Modelling	RMB600	6	A1N	Automation, Mechanical Engineering, Production Technology
Scientific Methods in Robotics and Automation	VTM605	3	A1N	Automation, Mechanical Engineering, Production Technology

Course	Course code	HE credits	Level	Main field of study
Smart Sensing	SSN600	6	A1N	Automation, Production Technology
Automation and Robotics Research	RBS710	6	A1F	Automation, Mechanical Engineering, Production Technology
Automation Systems	ATM700	6	A1F	Automation, Mechanical Engineering, Production Technology
Autonomous Robotics	AUR600	5	A1F	Automation, Production Technology
Design of Automationsystem	DEA700	5	A1F	Automation, Production Technology
Digital Factories	DIF700	6	A1F	Automation, Production Technology
Dynamics and Motion Planning	DOB600	6	A1F	Automation, Production Technology
Future Automation	FAU700	3	A1F	Automation, Production Technology
Machine Vision	MVI600	3	A1F	Automation, Production Technology
Manufacturing Optimisation	POP700	5	A1F	Automation, Production Technology

Course	Course code	HE credits	Level	Main field of study
Robotic Simulation	RSM700	6	A1F	Automation, Mechanical Engineering, Production Technology
Robotic Systems	RBS720	6	A1F	Automation, Mechanical Engineering, Production Technology
Simulation of Automated Production	SMA700	3	A1F	Automation, Mechanical Engineering, Production Technology
System Integration	SYI700	6	A1F	Automation, Production Technology
Degree Project	EXC915	30	A2E	Automation, Production Technology

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 courses Robotic Simulation 6 HE credits, Robotic Systems 6 HE credits and Scientific Methods in Robotics and Automation 3 HE credits, as well as for further studies in the program, the course Robot Certificate 1.5 HE credits, or equivalent, must be completed.
- For admission to the course Degree Project 30 HE credits, completed results of 60 HE credits within the program are required, including the courses Robot Certificate 1.5 HE credits and Automation and Robotics Research 6 HE credits, or equivalent.

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.