



HÖGSKOLAN I GÄVLE

Study Programme for a Master of Engineering in Land Surveying 300 cr

Civilingenjörsprogram i Lantmäteri teknik 300 hp

Set by -

Version

Set at

Valid from

6/11/19

ST20

Education level	First cycle
Programme code	TACIM
Credits	300 cr
Diary number	HIG-UTB 2019/9

Target

For a Degree of Master of Science in Engineering the student shall demonstrate the knowledge and skills required to work autonomously as a graduate engineer.

Knowledge and understanding

For a Degree of Master of Science in Engineering the student shall demonstrate knowledge of the disciplinary foundation of and proven experience in his or her chosen field of technology as well as insight into current research and development work, and demonstrate both broad knowledge of his or her chosen field of technology, including knowledge of mathematics and the natural sciences, as well as a considerable degree of specialised knowledge in certain areas of the field.

Skills and abilities

For a Degree of Master of Science in Engineering the student shall demonstrate the ability to identify, formulate and deal with complex issues autonomously and critically and with a holistic approach and also to participate in research and development work and so contribute to the formation of knowledge
demonstrate the ability to create, analyse and critically evaluate various technological solutions
demonstrate the ability to plan and use appropriate methods to undertake advanced tasks within predetermined parameters
demonstrate the ability to integrate knowledge critically and systematically as well as the ability to model, simulate, predict and evaluate sequences of events even with limited information
demonstrate the ability to develop and design products, processes and systems while taking into account the circumstances and needs of individuals and the targets for economically, socially and ecologically sustainable development set by the community
demonstrate the capacity for teamwork and collaboration with various constellations, and

demonstrate the ability to clearly present his or her conclusions and the knowledge and arguments on which they are based in speech and writing to different audiences in both national and international contexts.

Judgement and attitudes

For a Degree of Master of Science in Engineering the student shall demonstrate the ability to make assessments informed by relevant disciplinary, social and ethical aspects as well as awareness of ethical aspects of research and development work demonstrate insight into the possibilities and limitations of technology, its role in society and the responsibility of the individual for how it is used, including both social and economic aspects and also environmental and occupational health and safety considerations, and demonstrate the ability to identify the personal need for further knowledge and undertake ongoing development of his or her skills.

Other degree

Independent project (degree project)
 A requirement for the award of a Degree of Master of Science in Engineering is completion by the student of an independent project (degree project) for at least 30 credits.
 Miscellaneous
 Specific requirements determined by 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 of Science in Engineering.

Degree title

Degree of Master of Science in Engineering

Prerequisites

General entry requirements for higher education in Sweden and courses corresponding to the following Swedish Upper Secondary School courses:
 - Mathematics 4 or Mathematics E
 - Physics 2
 - Chemistry 1

Year 1

Period	Identifier	Title	Level	Credits	Field
1:1	SBG007	<i>Introduction to the Planning and Building Process</i>	G1N	7.5 cr	Surveying Technology
1:1	MSG100	<i>Data Analysis and Statistics for Master of Science in Engineering</i>	G1N	7.5 cr	Mathematics
1:2	MAG151	<i>Linear Algebra for Master of Science in Engineering</i>	G1N	7.5 cr	Mathematics
1:2	SBG310	<i>Cartography and GIS</i>	G1F	7.5 cr	Surveying Technology
1:3	DVG011	<i>Computer Systems and Programming Methodology</i>	G1N	15 cr	Computer Science
1:4	SBG309	<i>Cartography and CAD</i>	G1F	7.5 cr	Surveying Technology
1:4	SBG315	<i>Geodetic Measurement and Calculation</i>	G1F	7.5 cr	Surveying Technology

Year 2

Period	Identifier	Title	Level	Credits	Field
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2:1	SBG316	<i>GIS-Analysis</i>	G1F	7.5 cr	Surveying Technology
2:1	DVG331	<i>Applied Programming</i>	G1F	7.5 cr	Computer Science
2:2	MAG354	<i>Calculus in One Variable for Master of Science in Engineering</i>	G1F	7.5 cr	Mathematics
2:2	DVG332	<i>Basic Application Development for GIS</i>	G1F	7.5 cr	Computer Science
2:3	FYG304	<i>Optics and Waves</i>	G1F	7.5 cr	Physics
2:3	SBG317	<i>Open Source Cartography</i>	G1F	7.5 cr	Computer Science, Surveying Technology
2:4	IEG308	<i>Organisation and Project Management</i>	G1F	7.5 cr	Industrial Economics
2:4	MAG352	<i>Multivariable Calculus for Master of Science in Engineering</i>	G1F	7.5 cr	Mathematics

Year 3

Period	Identifier	Title	Level	Credits	Field
3:1	SBG319	<i>Buildings and Land Management</i>	G1F	7.5 cr	Surveying Technology
3:1	DVG333	<i>Object-Oriented Design and Programming</i>	G1F	7.5 cr	Computer Science
3:1	SBG318	<i>Geo-Science and Geo-Tech</i>	G1F	7.5 cr	Surveying Technology
3:2	MSG300	<i>Mathematical Statistics for Master of Science in Engineering</i>	G1F	7.5 cr	Mathematics
3:2	SBG320	<i>SDI and Service Oriented GIS Architectures</i>	G1F	7.5 cr	Computer Science, Surveying Technology
3:2	SBG321	<i>Construction Technology and Engineering Surveying</i>	G1F	7.5 cr	Building Engineering, Surveying Technology
3:3	DVG334	<i>GIS Programming for Web and Mobile Units</i>	G1F	7.5 cr	Computer Science
3:3	DVG335	<i>Algorithms and Data Structures for GIS</i>	G1F	7.5 cr	Computer Science

3:3	SBG325	<i>Laser Scanning</i>	G1F	7.5 cr	Surveying Technology
3:3	SBG324	<i>Geodetic Measurement Data Analysis</i>	G1F	7.5 cr	Surveying Technology
3:4	SBG510	<i>Project Course</i>	G2F	15 cr	Computer Science, Surveying Technology

Year 4

Period	Identifier	Title	Level	Credits	Field
4:1	SBA003	Advanced Application Development for GIS	A1N	15 cr	Geospatial Information Science
4:1	MAA100	Linear Algebra and Time Series Analysis	A1N	7.5 cr	Mathematics
4:1	SBA010	Geodetical Infra Structure	A1N	7.5 cr	Surveying Technology
4:2	BEA001	Decision-, Risk- and Policy Analysis 1	A1N	7.5 cr	Decision, Risk and Policy Analysis
4:2	MIA005	Technical Systems in a Sustainable Society	A1N	7.5 cr	Environmental Engineering, Sustainability Science
4:3	SBA302	Geodetical Deformation Surveillance	A1F	7.5 cr	Surveying Technology
4:3	SBA301	Photogrammetry	A1F	7.5 cr	Surveying Technology
4:3	SBA306	Advanced Geodata Analysis	A1F	15 cr	Geospatial Information Science
4:4	MIA300	Sustainable City Development	A1F	7.5 cr	Environmental Engineering
4:4	SBA303	Remote Analysis	A1F	7.5 cr	Surveying Technology

Year 5

Period	Identifier	Title	Level	Credits	Field
5:1	SBA307	Advanced Geodata Visualization	A1F	15 cr	Geospatial Information

					Science
5:1	BEA301	Decision-, Risk- and Policy Analysis 2	A1F	7.5 cr	Decision, Risk and Policy Analysis
5:1	SBA308	Physical Geodesi	A1F	7.5 cr	Surveying Technology
5:2	SBA309	Scientific Method and Writing for Master of Science in Engineering	A1F	7.5 cr	Surveying Technology
5:2	IEA300	Management for Sustainable Societal Development	A1F	7.5 cr	Industrial Economics
5:3	SBA800	Degree Work for Civil Engineering	A2E	30 cr	Surveying Technology