



## Qualification descriptor for Degree of Master of Science (120 credits) - Major; Civil Engineering

*Teknologie Masterexamen - Huvudområde; Väg- och vattenbyggnad*

**Degree regulations of 2007**  
**Second cycle**

### Specialisations

Name	Start term	For admitted until
Mining and Geotechnical Engineering ( <i>Jord och bergbyggnad</i> )		
Sustainable Constructions ( <i>Hållbara konstruktioner</i> )	A12	S18
Environmental Technology ( <i>Teknisk miljövård</i> )	A07	A09

### Established

Qualification descriptor approved on 2009-06-16 by Teknisk fakultetsnämnd. Qualification descriptor updated on 2010-03-30 by Chef utbildnings- och forskningsenheten.

### Examination Objectives

#### Higher Education Act

English information is not available

#### Higher Education Ordinance

Annex 2

##### Knowledge and understanding

For a Master of Arts/Science (120 credits) the student shall have:

- \* demonstrated 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
- \* demonstrated specialised methodological knowledge in the main field of study.

##### Competence and skills

For a Master of Arts/Science (120 credits) the student shall have:

- \* demonstrated the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
- \* demonstrated 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
- \* demonstrated the ability in speech and writing both nationally and internationally to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- \* demonstrated the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

##### Judgement and approach

For a Master of Arts/Science (120 credits) the student shall have:

- \* demonstrated 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
- \* demonstrated insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and

\* demonstrated the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

## Detailed objectives for this degree

After completed the master programme, students will have:

- Ability to carry out projects with a modern vision that addresses the current concerns of humankind, in particular to achieve a holistic vision of steel construction that goes beyond the classical vision of structural engineering – developing an integrated approach for the steel construction sector that includes safety and functional performance and environmental aspects. T
- Knowledge about and command the Structural Eurocodes as a common European basis for structural design in a multi-cultural environment and a business-oriented approach.
- Knowledge about and command of the current values related to Sustainability of the planet and Climate Changes.

## Specialisations

### Mining and Geotechnical Engineering

The program will:

- provide excellence in design, production, research and development work in the mining, quarrying and construction industry and also for various research and development institutions at both industry and the technical colleges and universities
- provide the ability to effectively use technology and measuring equipment to carry out experimental and scientific work and exercise in combining the knowledge and skills from different disciplines
- ability to provide written and oral presentation of technical or scientific problems and results for professionals and laymen in English
- provide training in methodology, including the ability to identify, formulate and solve problems within given time and financial frameworks, developing cooperative abilities of the students and provide opportunities to develop the capacity for responsible leadership
- provide preparation for and entrance to graduate studies.

### Sustainable Constructions

After completed the master programme, students will have:

- Ability to carry out projects with a modern vision that addresses the current concerns of humankind, in particular to achieve a holistic vision of steel construction.
- Knowledge and ability developing an integrated approach for the steel construction sector that includes safety and functional performance and environmental aspects.
- Knowledge and understanding about the Eurocodes as a common European basis for structural design in a multi-cultural environment and a business-oriented approach.
- Knowledge and understanding about the current values within structural design related to Sustainability of the planet and Climate Changes.

### Environmental Technology

## Credits

The programme requires 120 credits.

*The credits stated indicate the total for all courses leading to the degree. All courses are to have been completed and passed.*

## Special requirements

### Higher Education Ordinance and Luleå University of Technology

Independent project (degree project)

A requirement for the award of a Master of Arts/Science (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. (The Higher Education Ordinance, Annex 2 Qualifications ordinance)

Master of Arts/Science (60/120 credits) require a previous degree of Bachelor, Bachelor in fine arts or a professional degree of at least 180 credits or an equivalent foreign degree. (SFS 2006:1053, ch. 6, 5 § also appendix 2, Degree regulations)

A minimum of 90 credits of the education's 120 credits must consist of courses at second cycle level. A requirement for a Master's degree is that a main subject area has been formulated. (Riktlinjer för Bolognaanpassning (Guidelines for Bologna adaptation), LTU Dnr 783-06)

*All course requirements for this degree are stated in the official syllabus.*

### Degree certificate

*A degree certificate will be issued upon application to students who fulfil the requirements for a degree.*

### Course requirements for this degree

Syllabus - [Master Programme in Civil Engineering, with specialization in mining and Geotechnical Engineering](#) (Utbildningsplan - Väg- och vattenbyggnad, inr jord- och bergbyggnad, master)

Syllabus - [Master programme in Sustainable Constructions under Natural Hazards and Catastrophic Events](#) (Utbildningsplan - Hållbara konstruktioner under exceptionella laster, master)

Syllabus - [Master Programme in Environmental Engineering](#) (Utbildningsplan - Teknisk miljövård, master)