Master Programme in Water Resources Engineering

Programme code: TAWRE
Scope: 120 credits
Cycle: Second
Approved by: Educational Programmes Board C
Validity: 2014/2015
Date of approval: 26 April 2014
In addition to the syllabus, general regulations and information for the Faculty of Engineering apply to this programme.

1 Aim and outcomes

1.1 Aim

This internationally oriented master's programme aims to develop the knowledge, skills and judgement of students in the field of water resource management. On completion of the programme, students will be able to work in the water resources sector and be able to deal with matters relating to water resource management in a professional manner.
The Master of Science in Water Resources aims to

- offer a broad programme of study which covers the most important aspects of water resources;
- highlight the need to treat water resources in an integrated manner;
- give the students the opportunity to specialise in a chosen field of water resource management;
- offer access to current knowledge about and relevant methods of water resource management;
- impress on the students the importance of a scientific approach;
- take advantage of the opportunities available in a multinational group of students.

1.2 Outcomes for a Degree of Master of Science (120 credits)

(Higher Education Ordinance 1993:100)

Knowledge and understanding
For a Degree of Master of Science (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 of Science (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 report clearly 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 of Science (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.

1.3 Specific outcomes for a Degree of Master of Science (120 credits)

For a Degree of Master of Science (120 credits) students must demonstrate the knowledge and skills required for working independently with water resource management.

Knowledge and understanding
For a Degree of Master of Science (120 credits)students shall

- demonstrate knowledge and understanding in the field of water resources, 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 field of water resources.

Skills and abilities
For a Degree of Master of Science (120 credits) students shall

- demonstrate the ability to critically and systematically integrate knowledge of water resources from several perspectives and to 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 and 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 to report clearly and discuss their conclusions and the knowledge and arguments on which they are based in dialogue with different audiences both nationally and internationally.
- 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 of Science (120 credits) students shall

- demonstrate the ability to make assessments in the field of water resources informed by relevant disciplinary, social and ethical aspects and also to demonstrate awareness of ethical aspects of research and development work;
- demonstrate insight into the possibilities and limitations of research on water resources, its role in society and the responsibility of the individual for how it is used;

- demonstrate the ability to identify their need for further knowledge and take responsibility for their ongoing learning.

1.4 Further studies
On completion of the second-cycle degree, students have basic eligibility for third-cycle studies.

2 Programme structure
The programme consists of compulsory courses comprising 45 credits, elective courses comprising 45 credits and a degree project worth 30 credits.

2.1 Courses
The courses included in semesters 1 and 2 are indicated in the timetable. All courses are taught in English. In addition to these courses, students are entitled to accreditation of 7.5 credits of courses in Swedish (organised by Lund University for exchange students).

2.2 Levels
The courses on the programme are divided into levels. The level is indicated in the relevant course syllabus. The relevant levels are first cycle (G) and second cycle (A). These levels are defined in the Higher Education Act, Chapter 1 Section 8-9. First-cycle courses at the Faculty of Engineering are further subdivided into First cycle 1 (G1) and First cycle 2 (G2). G2 courses presuppose knowledge acquired on G1 courses. Second-cycle courses may constitute specialisations in a Master's degree.

2.3 Grades
Grades are awarded both for entire courses and for course components, when applicable. Course components are indicated in the relevant syllabus. Grades for an entire course are awarded according to a scale of four grades (Fail, 3, 4, 5) or a scale of two grades (Fail, Pass). If another scale of grades is applied, this is indicated in the course syllabus. Only entire passed courses (according to the four-grade scale) are included on the degree certificate. Grades awarded in Swedish higher education are criterion-referenced, i.e. the performances of students are assessed with reference to the relevant learning outcomes and no internal ranking of students is made.

3 Specific admission requirements

3.1 Admission requirements
To be admitted to the Master's programme in Water Resources, students must have a first degree of 180 credits in a subject of relevance to the programme. The first degree must include courses in mathematics, hydraulics and geology. Students must also have documented proficiency in English corresponding to at least English 6 in Swedish upper secondary school.

3.2 Selection
The applicants' grades or equivalent are the main criteria for selection. In addition, the subjects included in the applicants' first degree are considered.

4 Degree

4.1 Degree requirements
For a Degree of Master of Science (120 credits) students must successfully complete courses comprising 120 credits, including a degree project worth 30 credits. 75 credits must be second-cycle credits, including the degree project. Students who wish to include in the degree courses not listed in the timetable must submit an application to this effect to the relevant programmes board.

4.1.1 Degree project
For a Degree of Master of Science (120 credits) students must complete an independent project (degree project) of no less than 30 credits as part of the course requirements. The degree project must be completed in accordance with the valid course syllabus and must deal with a relevant subject.

4.2 Degree and degree certificate
When students have completed all the degree requirements, they are entitled to apply for a degree certificate for a Master of Science (120 credits). Main Field of Study: Water Resources Engineering.