



Master programme (One Year) in textile engineering

Magisterutbildning i textilteknik

60 credits

Ladok Code: TATET

Version: 1.0

Level: Second cycle

Approved by: Research and Education Board 2012-06-13

Valid from: Autumn 2013

Valid for:

General Objectives

Second level education shall essentially build on the knowledge that students acquire in first level education or corresponding knowledge. Second level education shall involve a deepening of knowledge, skills and abilities relative to first level education and, in addition to what applies to first level education, shall

- further develop the students' ability to independently integrate and use knowledge,
- develop the students' ability to deal with complex phenomena, issues and situations, and
- develop the students' potential for professional activities that demand considerable independence or for research and development work.

(The Higher Education Act, Chapter 1, Section 9)

Objectives

This programme aims to prepare the student for challenging technical work and research in equal measure. The programme is designed to give students a scientific understanding of different processes and techniques, while also applying these analytically and practically in order to independently solve specific technical problems with environmental, entrepreneurial and ethical issues in mind, as well as developing a technical interest. The courses listed below are included in the master's programme.

After completing the course, students must meet the learning outcomes for a two-year master's degree set out in the Swedish Higher Education Ordinance (1993:100).

1. Knowledge and understanding

The student must:

- 1.1 be able to demonstrate and apply broad technical knowledge of textile materials, processes and applications, including both basic materials and manufacturing engineering theories and methods, and deeper knowledge of the design, construction, manufacture and adaptation of advanced textile products.
- 1.2 demonstrate deeper technological and methodological knowledge within at least one such field of textile engineering, as well as an insight into current research and development work.
- 1.3 be able to describe in depth, and demonstrate an understanding of, sustainable development.

2. Skills and abilities

The student must:

- 2.1 demonstrate an ability to integrate knowledge and to analyse, assess and deal with complex textile engineering phenomena, issues and situations, even in cases where limited information is available.
- 2.2 independently be able to plan and employ appropriate methods to carry out advanced tasks within given time frames, quickly obtain new technical knowledge and apply this to textile-related development and renewal.
- 2.3 demonstrate an ability to independently identify different technical solutions, and to develop and design textile products, processes and systems, taking human conditions and needs and society's goals for economically, socially and ecologically sustainable development into account.

2.4 demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in dialogue with both industry representatives and laymen, orally and in writing.

2.5 demonstrate the skill required to participate in research and development work or to work in other advanced activities.

3. Judgement and approach

The student must:

3.1 demonstrate an ability to work in a social context and an organisational context, which involves being able to make assessments, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work.

3.2 demonstrate an insight into the opportunities, limitations and problems of science and technology, their role in society and people's responsibility for how they are used.

3.3 demonstrate an ability to identify their need for further knowledge and to take responsibility for developing their own knowledge.

4. Independent work (degree project)

For a one-year master's degree, students must have completed an independent degree project in textile engineering, within the framework of the course requirements.

Content

Teaching takes place in the form of lectures, exercises, laboratory sessions, seminars and project work with individual supervision. The courses at second-cycle level are planned in order to be well balanced, interesting and relevant to growing marketing requirements. These courses aim to prepare students for either challenging technical work or research in equal measure.

The programme is designed so that students will develop their scientific understanding of different processes and methods, while also applying these analytically and practically in order to independently solve specific technical problems with environmental, entrepreneurial and ethical issues in mind, as well as reinforcing and further developing a technical interest.

The subjects listed below are included in the textile engineering programme. They fall into four categories: advanced textile materials engineering, textile construction and manufacturing, smart textiles, and textile entrepreneurship and management. The component courses represent, in a logical manner, a realistic progression within the textile engineering value chain, which is characterised by an increasing complexity from raw material to finished, sometimes high-tech products.

Study periods 1-4 (certain changes may take place between study periods)

Study period 1: Advanced textile materials engineering

Polymer engineering (7.5 HEC) Objectives 1.1, 1.3, 2.1 - 2.4

this course provides students with a more in-depth understanding of polymer engineering.

Fibre engineering I (7.5 HEC) Objectives 1.1, 2.1 - 2.2, 2.4

This course is devoted to fibre and the mechanical properties of fibre, production methods for fibre, surface treatment and structural properties.

Study period 2: Advanced textile materials engineering

Surface chemistry and chemical treatment (10.5 HEC) Objectives 1.1, 1.3, 2.1 - 2.4

This course deals with chemical methods for the treatment of textiles, the chemical structure and properties of textile chemicals, and textile process chemistry.

Fibre engineering II (4.5 HEC) Objectives 1.1, 2.1 - 2.2, 2.4

This course discusses composite materials with emphasis on textile structures.

Study period 3: Textile construction and manufacturing

Textile construction and product development (7.5 HEC) Objectives 1.1, 1.2, 2.2, 2.4, 2.5, 3.1 3.2

This course deals with the product development process and applied textile technology in connection with product development and design. The course includes selection of fibres, yarns and fabrics in connection with application.

Scientific methodology and communication (7.5 HEC) Objectives 1.2, 2.4, 2.5

Enhanced scientific approach and application of scientific methods in investigations and research work, and communication of the same. Evaluation of scientific texts, criticism of sources and reference management.

Study period 4: Textile technology Degree project (15 HEC) Objectives 1.1 - 3.3

The final work in the master's programme, in which acquired knowledge and a scientific and professional approach are applied

in order to implement a major project assignment involving problem solving which includes analysis and drawing of conclusions.

Admission Requirements

- Bachelor's degree 180 credits, in textile engineering or equivalent qualifications. "Equivalent qualifications" means that the applicant should have completed a three-year engineering course including at least 15 credits in mathematics, 7.5 credits in chemistry (with at least half in organic chemistry), 7.5 credits in materials engineering (with at least half in polymer materials), and 15 credits in textile production methods.
- Verified knowledge of English corresponding to the course *English B/6* in the Swedish Upper Secondary School or a Bachelor's degree from a university in Sweden, Denmark, Norway, Finland or Iceland.

For further information about English language proficiency, please view: <http://www.hb.se/en/International-student/Bachelor--Master-student/Application--Admission/Admission-process/English-language-proficiency/>

Degree

Master of Science (60 credits) with a major in Textile Engineering

Major Subject(s):

- Textile Engineering

Degree certificates are issued upon application on a special form. More information is available at www.hb.se.

Student Influence and Evaluation

In order to ensure that the programme fulfils its scope and purpose, a structured quality insurance programme has been initiated at the institution. The basis for this is the university's quality policy and other policies regulating the activities of the university. These are complemented by the Swedish School of Textiles own system of mandatory course evaluations and scheduled evaluation meetings with students and responsible staff. In these meetings, courses are evaluated in relation to each other and in the relation to the overriding aims of the programme. Also, programme meetings with students and the programme director are regularly held each month. Students are also represented as elected representatives in the board of the institution. The programme director holds regular as well as informal meetings with the students. These meetings constitute an important forum for quickly identifying problems and to introduce suggestions and ideas from the students in the programme. The programme director is responsible to ensure progression in all courses and to for structuring teaching methods in a programme with a large number of visiting teachers.

Miscellaneous

Teaching takes place in English.

The Swedish document is the original. In the event of any uncertainty in connection with translations into other languages, the Swedish version shall apply.

This degree provides authorisation for research studies within textiles and fashion.

The language of instruction is English.