



## Functional Textiles

### Funktionell Textil

7.5 credits

7.5 högskolepoäng

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**Ladok Code:** AT1FN1

**Version:** 1.0

**Established by:** Committee for Education in Technology 2022-04-08

**Valid from:** Autumn 2022

**Education Cycle:** First cycle

**Main Field of Study (Progressive Specialisation):** Textile Engineering (GIN)

**Disciplinary Domain:** Technology

**Prerequisites:**

**Subject Area:** Textile Technology

**Grading Scale:** Seven-degree grading scale (A-F)

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### Content

This course focuses on functional textiles and their different applications areas. Functional textiles include textile fiber materials to which specific functions or properties have been added through a variety of technical processes, constructions or finishes. It aims to provide an overview of how material selection and construction is the basis for meeting customer and product requirements in various application areas such as for sports, personal protective equipment, smart textile systems, medical technology applications etc. Based on customer needs and suitable methods, students will exercise their ability to seek relevant information for developing innovative functional textile products with special requirements from a sustainability perspective. It also provides insight into the standards and product certifications that exist in the international market.

### Learning Outcomes

After completing the course, the student should be able to, with regard to:

#### Knowledge and Understanding

1.1 Define functional materials and textile constructions, and describe their properties with basic physical and textile technical terminology.

1.2 describe opportunities and challenges in the choice of materials and textile technological solutions for functional textiles

1.3 explain the interplay between materials, technologies and product development and how these relate to sustainable development from a social, ecological and economic perspective.

1.4 Account for how customized and product requirements are applied in the product development process

#### Skills and abilities

2.1 plan, document and present a search strategy for knowledge acquisition

2.2 design specifications with verifiable requirements based on customer analysis

2.3 identify rules, standards and certifications that apply to textile products from a global perspective

2.4 independently and in a group take responsibility for their own learning with regard to knowledge acquisition

2.5 in writing and orally present and communicate compiled information with stakeholders

#### Judgment and approach

3.1 critically evaluate information and sources when acquiring knowledge of functional textiles

3.2 argue for how materials, new material combinations or technologies can be used in the development of functional textiles

### Forms of Teaching

The teaching of the course consists of:

- Lectures
- Workshops/Laborations

- Group work
- Seminars

Teaching is conducted in English, but some teaching in Swedish may occur

The language of instruction is English. However, instruction in Swedish may occur.

### **Forms of Examination**

The course is examined through the following examinations:

- Written assignment 1 (Learning outcomes: 1.2-1.3, 2.1-2.5), 1,5 hp Grading scale: UG
- Written and oral assignment 2 (Learning outcomes: 1.3-1.4, 2.2-2.5, 3.1-3.2), 3,0 hp Grading scale: UG
- Written exam (Learning outcomes: 1.1 - 1.2, 2.2 - 2.5, 3.1), 3.0 hp Grading scale: E7

Grading scale: E7 (A, B, C, D, E, Fx eller F) according to ECT-grading scale

The written exam determines the final grade of the course, provided that all other examinations have the lowest grade pass (G).

If the student has received a decision/recommendation regarding special pedagogical support from the University of Borås due to disability or special needs, the examiner has the right to make accommodations when it comes to examination. The examiner must, based on the objectives of the course syllabus, determine whether the examination can be adapted in accordance with the decision/recommendation.

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

### **Literature and Other Teaching Methods**

The course literature is primarily in English

Horrocks, A. R. & Anand, S. C. (2016) Handbook of Technical Textiles: Technical Textile Applications. Cambridge: Elsevier Science & Technology.

Shahid, M. & Adivarekar, R. (2020) Advances in Functional Finishing of Textiles. 1st ed. 2020. [Online]. Singapore: Springer Singapore.

Additional literature will be available on the HB's learning platform.

### **Student Influence and Evaluation**

The course is evaluated in accordance with current guidelines for course evaluations at the University of Borås in which students' views are to be gathered. The course evaluation report is published and returned to participating and prospective students in accordance with the above-mentioned guidelines, and will be taken into consideration in the future development of courses and education programmes. Course coordinators are responsible for ensuring that the evaluations are conducted as described above.

### **Miscellaneous**

This syllabus is a translation from the Swedish original.