



## Advanced fibre and yarn technology Avancerad fiber och garnteknologi

7.5 credits

7.5 högskolepoäng

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**Ladok Code:** AT2FG2

**Version:** 3.0

**Established by:** Committee for Education in Technology 2022-03-04

**Valid from:** Autumn 2022

**Education Cycle:** Second cycle

**Main Field of Study (Progressive Specialisation):** Textile Engineering (A1N)

**Disciplinary Domain:** Technology

**Prerequisites:** Admitted to the master's programme in textile technology and engineering.

**Subject Area:** Textile Technology

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

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### Content

The course provides the students advanced level technical knowledge of textile fibres and yarns. There is particular emphasis on production methods with analysis and modeling according to:

- Production methods for synthetic textile fibre/yarn by melt spinning is investigated, analysed and modeled, focusing on material flows in spin processes, shear and orientation.
- Current technology of sustainable textile fibre production is investigated.
- Textile fibre processing, testing and characterization are studied and analyzed with partial emphasis on recycled fibres.
- The yarn production process of staple fibres is investigated and modeled at an advanced level.
- Yarn functionalization, texturing, finishing and catherization will be investigated and analyzed.

### Learning Outcomes

Upon completion of the course the students should be able to, with regard to

#### Knowledge and understanding

- 1.1 demonstrate technical know-how of fibre/yarn production processes and characterization in a systematic way,
- 1.2 account for advanced yarn/fibre testing and characterization,
- 1.3 in detail account for the interrelation between fibre parameters and production methods of yarn,
- 1.4 describe how modeling of fibre/yarn production methods is conducted.

#### Skills and abilities

- 2.1 identify suitable production methods for fibre/yarn based on the properties of the raw materials,
- 2.2 identify yarn structures and characterization and describe the production process in a scientific context,
- 2.3 identify and interpret data from fibre/yarn testing and characterization, put them into a scientific context and communicate results to both scholars and laymen, and
- 2.4 demonstrate methodological skills to master their own and collaborators projects.

#### Assessment and approach

- 3.1 critically analyze the environmental impact of fibres and yarns and argue for choice of technology,
- 3.2 analyze how production methods affect the properties of fibres and yarns,
- 3.3 assess yarn structures in terms of technical performance and raw material demands.

### Forms of Teaching

Lectures, seminars, group discussions, case studies, educational visits, project work and lab assignments.

The language of instruction is English.

### Forms of Examination

The course is examined through the following steps:

- Written exam  
Learning outcomes 1.1, 1.3-1.4, 2.1-2.2, 3.1, 3.3  
Credits: 2.5  
Grading scale: A-F

Assignment, seminars  
Learning outcomes: 1.1, 1.3-1.4, 2.1-2.4, 3.1, 3.3  
Credits: 3.0  
Grading scale: Pass/Fale

Lab assignment with report  
Learning outcomes: 1.2-1.3, 2.1-2.3, 3.2  
Credits: 2.0  
Grading scale: Pass/Fale

Grading scale: E7, i.e. A, B, C, D, E, Fx or F (ECTS).

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 Materials**

Supplementary material is distributed during the course.

Additional hand-outs, scientific papers, lab-PM is provided through the UB 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.