UNIVERSITY OF BORÅS

Textile Fibres - From production to recycling

Textila fibrer - Från produktion till återvinning

7.5 credits
7.5 högskolepoäng

Ladok Code: AT1FP1
Version: 3.0
Established by: Committee for Education in Technology 2021-12-17
Valid from: Autumn 2022

Education Cycle: First cycle
Main Field of Study (Progressive Specialisation): Textile Technology (G1N)
Disciplinary Domain: Technology
Prerequisites: General entry requirements for university studies.
Subject Area: Textile Technology
Grading Scale: Seven-degree grading scale (A-F)

Content

The course aims to provide the participants with basic knowledge about different fibers and yarn processes and how different fiber and yarn types affect the textile product quality and application areas. The introductory lectures deal with the production of various natural and artificial fibers as well as the structure, properties and application areas of those fibers. Then the course goes into the most common yarn spinning and texturing methods as well as properties of different yarn types and fiber blends. The properties of synthetic (plastic) fibers and their production methods (melt spinning, solution spinning and other alternatives) will also be the focus of this course. The last part will cover the problems of the textile industry and recycling options for different fibers. All lectures deal with the environmental and economic aspects of various fibers and processes.

Learning Outcomes

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

Knowledge and understanding
1.1 give an account of the classifications, names and properties of the textile fibers,
1.2 describe the basic concepts and processes for the production of natural, regenerated and synthetic fibers,
1.3 describe the morphology-dependent properties of the fibers,
1.4 explain the basic / advanced processes for yarn spinning and texturing,
1.5 describe the industrial classification of yarns and applications,
1.6 identify and explain the development and manufacturing process for fibers and yarns from raw materials to recycled products from a sustainability perspective.

Skills and Abilities
2.1 show how different levels in the fiber morphology affect the properties of the fiber,
2.2 identify unknown materials at structure, yarn and fiber level,
2.3 search for information in scientific articles and account for these,
2.4 based on the application area, assess the appropriate material choice with regard to fiber and yarn structure,
2.5 interpret and use the data from tables and diagrams that describe material properties.

Evaluation ability and approach
3.1 evaluate and assess environmental aspects in the production of fibers and yarns based on different areas of use,
3.2 evaluate and assess the impact of different fiber blends on properties, environment and economy,
3.3 describe different recycling options depending on the type of textile material.

Forms of Teaching

The teaching is given entirely at a distance and consists of:

- Lectures
- Self study

The language of instruction is English.

Forms of Examination

The course is examined through the following examination elements:

- Written Exam
  Learning outcomes: (1.1-1.6, 2.1, 2.3-2.5, 3.1-3.3)
  Credits: 5,0
  Grading Scale: A-F
- Quiz
  Learning outcomes: All
  Credits: 2,5
  Grading Scale: U/G

  The grade on the written exam determines the final grade of the course, which is issued only when all parts have been completed and passed.

  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

The course literature is in English and is available via the University's library as E-books.

Mather, Robert R. & Wardman, Roger H. *The chemistry of textile fibres.* (Senaste upplagan). Cambridge: RSC Publishing

Sara J. Kadolph. Pearson New International Edition, *Textiles*, (Senaste upplagan).

Material available via 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 student perspectives are to be collected.
The course evaluation report is published and made available to participating and prospective students in accordance with the above guidelines and forms the basis for the future development of courses and educational programmes. The course coordinator is responsible for ensuring these guidelines are followed.

Miscellaneous

The course is standalone distance course.
This syllabus is a translation from the Swedish original.