UNIVERSITY OF BORÅS

Fibre technology
Fiberteknologi

6 credits
6 högskolepoäng

Ladok Code: AT2FT1
Version: 1.0
Established by: Committee for Education in Technology 2017-10-20
Valid from: Autumn 2017

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Textile Engineering (A1N)
Disciplinary Domain: Technology
Prerequisites: Admitted to the master's program in textile technology.
Subject Area: Textile Technology
Grading Scale: Seven-degree grading scale (A-F)

Content

The course begins with the basic concepts of fiber technology and fiber science, and then gives a brief overview of existing natural, regenerated and synthetic fibers with the main focus on common characteristics, applications and sustainability issues. Then, the production methods for synthetic and regenerated fibers, such as melt spinning, flushing of solutions, gel spinning and electro spinning will be discussed in detail. The focus is on critical process parameters that can affect the fiber properties and the environmental impact of the processing methods. Then, the more common technical fibers, their characteristic properties and uses will be discussed in detail. Different characterization methods will be studied such as mechanical, uniformity, and fiber twisting.
At the end of the course, sustainability issues are discussed. related to the textile industry's recycling strategies as well as the problems associated with textile recycling. The course also includes seminars where students will actively participate and present specific topics. In the course of the course, students can produce melt-spun mono- and multilayer fiber fibers as well as non-woven blankets through carding and needle punching
An active participation in both lectures and laboratories is a prerequisite for being able to take advantage of the course content.

Learning Outcomes

After completing the course successfully, the student should be able to:
1 Knowledge and understanding
1.1 Explain the difference between natural and synthetic fibers and filaments,
1.2 Explain artificial fiber and filament production methods and their impact on further textile processing,
1.3 Characterizes mechanical, thermal and surface properties of fibers and filaments,
1.4 Explain technical requirements for fiber that governs the recovery of textiles,

2 Skills and abilities
2.1 Produce melt spun mono- and multifilament and characterize them,
2.2 Produce non-woven structures,
2.3 Identify the application areas depending on the properties of the fibers and filaments,

3 Valuation and approach
3.1 Identify strategies for recycling textile waste for different textile materials,
3.2 Evaluate the economic and technical aspects of the recycling potential of different textile materials.

Forms of Teaching

The teaching consists of lectures, project work, seminars and laboratory exercises

The language of instruction is English.

Forms of Examination

The course is examined through the following examinations:
Exam: Written Examination
Goal: 1.1-1.4, 2.1-2.3,3.1-3.2
Credits: 4,0 hp
Grade: ECTS

Seminars
Goal: 1.1-1.2, 2.1-2.3, 3.1-3.2
Credit: 1,0 hp
Grade: Fail or Passed

Lab Report
Goal: 2.1, 2.2
Credit: 1,0 hp
Grade: Fail or Passed

All parts must be passed, but the grade is determined by the written exam.

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

Literature and Other Teaching Materials

Sinclair, R. & Sinclair, Rose (2015). Textiles and fashion [Elektronisk resurs] : materials, design and technology. Oxford: Woodhead Publishing.

Kadolph, Sara J (2013). Textiles: Pearson New International Edition [Elektronisk resurs].

The Society of Fiber Science and Techno, Japan. (red.) (2016). High-Performance and Speciality Fibers Concepts, Technology and Modern Applications of Man-Made Fibers for the Future.

Wang, Youjiang. (red.) (2006). Recycling in textiles [Elektronisk resurs]. Cambridge: Woodhead Publishing Limited.

Relevant research articles will also be used. Handed out material via HB's online learning platform.

Student Influence and Evaluation

The students' opinions are collected systematically and regularly through written course evaluations once the course is completed. One time per semester, student representatives, together with the Director of studies and Programme Directors, evaluate completed courses. For addition materials, please refer to the University's policy on course evaluation and documents established by the Department board, the Director of studies and the Programme director.

Miscellaneous

This course is primarily a programme course in the Master programme in textile engineering.

This syllabus is a translation from the Swedish original.