



Textile structures

Textila strukturer

7.5 credits

Ladok Code: AT1ST2

Version: 1.0

Established by: Committee for Education in Technology 2025-02-28

Valid from: Autumn 2025

Education Cycle: First cycle

Main Field of Study (Progressive Specialisation): Textile Technology (G1F)

Disciplinary Domain: Technology

Prerequisites: Fiber and Yarn Technology 5 credits, Knitting Technology 5 credits, and Weaving Technology 5 credits

Subject Area: Textile Technology

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

Content

The course aims to give students in-depth knowledge of weaving, knitting fibre and yarn technology, and an introduction to how the choice of fibre and yarn affects woven and knitted products. The content of the course is presented through lectures and laboratory work in weaving, knitting, and testing. The specialisation of fibre and yarn technology addresses the importance of fibre morphology for yarn spinning and the properties of the finished textile structure. Furthermore, different processes for producing staple fibre yarn and texturing of filament yarn and classification and evaluation of yarn are described.

The lectures in weaving deepen the students' knowledge of weave structures and how the settings of the fabric affect the properties of the woven material. In addition, students are introduced to jacquard weaving and special equipment for velvet, terry, and gauze. The lectures in knitting cover the area of warp knitwear with processes, concepts, division, and analysis of warp knitwear structures. All lectures are followed up by laboratory work in weaving and knitting where the students practically apply knowledge with emphasis on how the choice of fibre and yarn as well as production parameters affect the properties of a textile product. The laboratory work also includes testing techniques with a selection of evaluation methods for yarn, knitting, and weaving.

Learning Outcomes

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

Knowledge and understanding

- 1.1 Describe how the morphology of different fibres affects yarn spinning processes and properties in woven and knitted structures.
- 1.2 Describe the classification and processes to produce staple fibre yarn and the texturing of filament yarn.
- 1.3 Describe how the fabric's laying and choice of weave structure can affect properties based on a given yarn.
- 1.4 Explain the specificity of different special equipment for special woven structures.
- 1.5 Explain the difference when designing weave for weaving machine with shaft or jacquard.
- 1.6 Explain the warp knitwear definitions and concepts and the structure of warp knitwear materials.
- 1.7 Explain different types of warp knitwear structures for industrial knitwear production.
- 1.8 Describe how the characteristics of a knitted or crocheted garment are affected by machine adjustment and choice of binding based on given yarn.

Competence and skills

- 2.1 Identify and apply yarn technology concepts such as yarn type, yarn number, twisting and plying
- 2.2 Adapt weaving in weaving machines based on given machine conditions.
- 2.3 Identify and apply warp-knitted concepts such as binding, number of guide bars, stitch density and pattern links.
- 2.4 Apply bindings and selection of fibre and yarn to construct woven and knitted materials based on given specifications.
- 2.5 Evaluate yarn, knitted and woven materials based on given standards.

2.6 Analyse, compare and assess different types of knitted and woven products and relate these to quality in terms of use.

Judgement and approach

3.1 Reflect on economic and environmental aspects when choosing fibre, yarn and production method for knitted and woven products.

Forms of Teaching

The course teaching consists of:

- Lectures
- Laboratory sessions

The language of instruction is English.

Forms of Examination

The course will be examined through the following examination elements:

Exam

Learning outcomes: 1.1–2.6

Credits: 5

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

Laboration with assignment

Learning outcomes:

Credits: 2.5

Grading scale: Fail (U) or 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 Materials

Kadolph, S.J, 2014, Pearson New International Edition, Textiles. Pearson.

Ekstedt Bjersing, M & Kärman A., 2023, Binding / Weave structures (pdf). New edition of Kärman, A & Rydin, E., 2010, Binding, Textile Support Scandinavia

Peterson, Joel (latest edition). Knitting technology, Textile support Sweden AB.

Wynne, A., 1997, Textiles. The Motivate series, MacMillan Texts for Industrial Vocational and Technical Education. A selection of articles and other materials will be included.

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.

The course is primarily a programme course for the Bachelor's programme Textile Production and Innovation.