



## Advanced dyeing and finishing technology Avancerad färgnings- och beredningsteknik

7.5 credits

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**Ladok Code:** AT1FB2

**Version:** 2.1

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

**Valid from:** Autumn 2025

**Education Cycle:** Second cycle

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

**Disciplinary Domain:** Technology

**Prerequisites:** Bachelor's degree in textile technology or 30 credits in first-cycle course(s) in textile technology (level G2F) of which at least 3 credits in dyeing and finishing.

**Subject Area:** Textile Technology

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

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### Content

The course builds on basic knowledge in dyeing and finishing and aims to give the student an in-depth understanding of the physical and chemical mechanisms that underlie dyeing and finishing, including printing and functionalisation of textile materials. In addition to conventional dyes, chemicals, and dye and finishing processes, the student will broaden their theoretical and practical knowledge in advanced and resource-efficient processes, such as spray, plasma and supercritical carbon dioxide technology as well as digital printing techniques. Evaluation and analysis of textile properties in relation to set requirements is also included. After the course, the student is expected to be able to critically evaluate and argue for the choice of materials and processes adapted for different production volumes and what enables a local and flexible production. This with a focus on the technologies of the future in the field of sustainable development in a globalised industry. Examination is of both theoretical and practical components.

### Learning Outcomes

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

#### Knowledge and understanding

- 1.1 explain concepts, mechanisms and principles that are relevant in the field of dyeing and finishing,
- 1.2 be able to accurately describe dyeing and finishing processes,
- 1.3 explain the differences between conventional and more resource-efficient dyeing and finishing processes, and describe their application to change the properties of textiles based on set requirements,
- 1.4. explain dyeing and finishing processes that are suitable for different production volumes, and
- 1.5 with in-depth understanding of textile technology, explain the possibilities and challenges of dyeing and preparation techniques, taking into account social, ecological and economic sustainability aspects.

#### Competence and skills

- 2.1 critically and systematically apply acquired knowledge to interpret the latest scientific literature on the subject,
- 2.2 plan and carry out laboratory tasks within predetermined time frames and quickly acquire and apply new technical knowledge,
- 2.3 analyse and critically evaluate different technical solutions in dyeing and preparation, taking into account society's goals for economically, socially and ecologically sustainable development,
- 2.4 communicate orally and in writing with theories relevant to the course and lab results to laymen, classmates, industry representatives and teachers in good English,

### Judgement and approach

3.1 choose and argue for the choice of materials and dyeing and preparation processes to change the properties of textiles based on set requirements,

3.2 choose and argue for the choice of dyeing and finishing processes adapted for different production volumes and what enables a local and flexible production.

### **Forms of Teaching**

The teaching of the course consists of

- Lectures
- Seminars
- Laboratory sessions

The language of instruction is English.

### **Forms of Examination**

The course will be examined through the following examination elements:

#### *Exam*

Learning outcomes:

Credits: 3

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

#### *Laborations*

Learning outcomes:

Credits: 0.5

Grading scale: Fail (U) or Pass (G)

#### *Oral presentation*

Learning outcomes:

Credits: 1

Grading scale: Fail (U) or Pass (G)

#### *Written presentation*

Learning outcomes:

Credits: 3

Grading scale: Fail (U) or Pass (G)

The grade on the exam determines the grade for the entire course and is issued when the student has passed all examinations in the course.

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.

Choudhury, A. K. R. (2017)?Principles of Textile Finishing. Cambridge: Elsevier Science & Technology.

Clark, M. (2011)?Handbook of Textile and Industrial Dyeing: Principles, Processes and Types of Dyes.?Cambridge: Elsevier Science & Technology.

Muthu, S. S. & Gardetti, M. Á. (2020)?Sustainability in the Textile and Apparel Industries: Production Process Sustainability. Cham: Springer International Publishing AG

In addition, articles, research reports and other material can be made available via the university'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.

The course is primarily a program course for the Master Programme (Two Year) in Technical Textile Innovation but is also given as a free standing course.