



## Traceability in the textile value chain

### Spårbarhet i textila försörjningskedjor

7.5 credits

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**Ladok Code:** AE2TF1

**Version:** 1.0

**Established by:** Committee for Education in Business and Working Life 2020-05-13

**Valid from:** Autumn 2020

**Education Cycle:** Second cycle

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

**Disciplinary Domain:** Social sciences

**Prerequisites:** Completed courses within the program equivalent to 60 higher education credits, including completed course Sustainable supply chain management in apparel and textiles (7,5 credits).

**Subject Area:** Leadership, Organisation and Management

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

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### Content

The course aims to provide students with basic understanding of traceability system and tools for ensuring business integrity and sustainability in textile value chain. The course covers the fundamental aspects of traceability in textile and clothing industry such concepts of internal and external traceability, general traceability schema and processes, and product tagging technologies (e.g. QR codes, RFIDs etc.). In addition, the course includes introduction to traceability information system including blockchain, scope and application of traceability systems, with specific focus on certification traceability models and on sustainable supply chain management context.

### Learning Outcomes

After completing the course the student should be able to:

#### *Knowledge and understanding*

- 1.1 Explain the fundamental components of supply chain traceability,
- 1.2 describe key tagging technologies used for implementing traceability in the supply chain,
- 1.3 explain information systems (blockchain) for keeping the track of traceability data,
- 1.4 differentiate traceability models offered by existing sustainability certification schemes,

#### *Skills and abilities*

- 2.1 apply knowledge of blockchain in the context of supply chain traceability,
- 2.2 ability to identify the requirements of a traceability system for a required application scenario,
- 2.3 compare various traceability tagging technologies and data management strategies in terms of their pros and cons for textile value chain management,
- 2.4 compare certification-enabled traceability models in terms of their pros and cons for sustainable supply chain management,

#### *Evaluation ability and approach*

- 3.1 critically and independently analyze/debate the features and limitations of a traceability system,
- 3.2 reflect on the role of traceability in sustainable supply chain management,
- 3.3 reflect on complexities associated with implementation of supply chain traceability,
- 3.4 devise initial traceability system for a given application scenario.

### Forms of Teaching

Teaching comprises lectures, seminars, self-studies, presentations, written assignments in form of essays.

The language of instruction is English.

## Forms of Examination

The course will be examined through the following examination elements

Assignment: written group assignment

Learning outcomes 2.1-2.4, 3.1-3.4

Credits: 3.0

Grading scale: Fail (U)/Pass (G)/Well approved (VG)

Presentation: oral group presentation

Learning outcomes 2.1-2.4, 3.1-3.4

Credits: 1.0

Grading scale Fail (U)/Pass (G)

Written exam: individual written exam

Learning outcomes 1.1-1.4, 2.2-2.4

Credits: 3.5

Grading scale A-F

Students must pass all examinations (with at least E for individual exam and G for both group assignment and group presentation) in order to achieve a minimum final grade of E. To gain the final grade of A, VG is required for group assignment and A for individual exam. To gain the final grade of B, C, D or E: minimum G is required for group written assignment and B, C, D or E respectively for the individual written exam.

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

- Agrawal, T.K., Sharma, A. and Kumar, V. (2018). Blockchain-based secured traceability system for textile and clothing supply chain. In: Thomassey, S. and Zeng, X. eds. *Artificial intelligence for fashion industry in the big data era*, Singapore, Springer, pp. 197-208.
- Lee, D. and Park, J. (2010). RFID-enabled supply chain traceability: existing methods, applications and challenges. In: Sustainable Radio Frequency Identification Solutions. In: Turcu, C. ed. *Sustainable radio frequency identification solutions*, London, IntechOpen, pp. 51-68.
- GS1 (2013). *Research Support for an Informal Expert Group on Product Traceability*. Brussels, European Commission.
- Budak, A., Ustundag, A., Kilinc, M.S. and Cevikcan, E. (2018). Digital Traceability Through Production Value Chain. In: Ustundag, A. and Cevikcan, E. (eds.). *Industry 4.0: Managing The Digital Transformation*. Cham, Springer, pp. 251-65.
- Kumar, S. and Cowles, J. (2007). RFID: Impact of Improved Supply Chain Traceability. In: Kumar, S. ed. *Connective Technologies in the Supply Chain*. New York, Auerbach Publications, pp 57-76.
- ElMessiry, M. and ElMessiry, A. (2018). Blockchain framework for textile supply chain management. In: Chen, S., Wang, H. and Zhang L.J. eds. *Blockchain – ICBC 2018. ICBC 2018. Lecture Notes in Computer Science*, Cham, Springer, pp. 213-27.
- Alves, B. et al. (2014). Fairtrace: applying semantic web tools and techniques to the textile traceability. In: Hammoudi, S., Cordeiro, J., Maciaszek, L. and Filipe, J. eds. *Enterprise Information Systems. ICEIS 2013. Lecture Notes in Business Information Processing*. Cham, Springer, pp. 68-84.
- Bechini, A., Cimino, M.G., Marcelloni, F. and Tomasi, A. (2008). Patterns and technologies for enabling supply chain traceability through collaborative e-business. *Information and Software Technology*, 50(4), pp. 342-359.
- Norton, T. et al. (2014). *A Guide to traceability. A practical Approach to Advance Sustainability in Global Supply Chain*. New York, United Nations Global Compact, available at [https://www.bsr.org/reports/BSR\\_UNGC\\_Guide\\_to\\_Traceability.pdf](https://www.bsr.org/reports/BSR_UNGC_Guide_to_Traceability.pdf)
- Mol, A. and Oosterveer, P. (2015). *Certification of markets, markets of certificates: Tracing Sustainability in global Agro-Food Value Chains. Sustainability*, 7(9), pp. 12258-78.

A selection of additional literature can be included in the course (maximum 200 pages).

## 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**

The course is part of the Master Program in Textile Value Chain Management.