



## Robust and circular concrete construction Robust och cirkulär betongbyggnation

7.5 credits

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**Ladok Code:** A552TA

**Version:** 1.0

**Established by:** Committee for Education in Technology 2026-05-29

**Valid from:** Autumn 2026

**Education Cycle:** Second cycle

**Main Field of Study (Progressive Specialisation):** Civil Engineering (A1F)

**Disciplinary Domain:** Technology

**Prerequisites:** Meets the requirements for admission to the Master's program in Resource Recovery specialization Sustainable Civil Engineering

**Subject Area:** Building Technology

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

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### Content

The course focuses on robust and circular concrete construction with particular emphasis on recycling, circular material flows, and resource-efficient solutions. Core topics include concrete recycling, the use of industrial by-products, and how different exposure environments affect the durability of concrete. The course also addresses indoor environmental quality, energy storage in concrete buildings, prefabrication, and design for deconstruction.

### Learning Outcomes

After completing and passing the course, students should be able to:

Knowledge and understanding

- 1.1 Explain principles of circular economy as applied to concrete construction
- 1.2 Describe methods for concrete recycling and the use of industrial by-products
- 1.3 Explain how environmental exposure classes influence concrete durability and service life
- 1.4 Explain the connections between sustainability, durability and technical performance requirements for concrete

Skills and abilities

- 2.1 Analyze resource-efficient solutions for robust and circular concrete construction
- 2.2 Apply basic principles of design for deconstruction and reuse
- 2.3 Present technical and sustainability-related analyses orally and in writing

Evaluation ability and approach

- 3.1 Critically assess different strategies for sustainable and circular concrete construction
- 3.2 Reflect on the role of concrete in a future resource-efficient and climate-neutral society

### Forms of Teaching

The course consists of lectures, seminars, laboratory work and supervision.

The language of instruction is English.

### Forms of Examination

The course will be examined through the following examination elements:

#### *Exam*

Learning outcomes:

Credits: 3.5

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

*Project work with seminar*

Learning outcomes:  
Credits: 2  
Grading scale: Fail (U) or Pass (G)

*Laboratory work*

Learning outcomes:  
Credits: 2  
Grading scale: Fail (U) or Pass (G)

To receive the grade the student must pass all examination moments. The grade is determined by the 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**

### **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 intended for students in the Master Program in Resource Recovery – Sustainable Civil Engineering but is also offered to exchange students. This syllabus is a translation from the Swedish original