UNIVERSITY OF BORÅS

Resource Effective Building: LCA, LCC

Resurseffektivt byggande: LCA, LCC

7.5 credits

Ladok Code: A503TA
Version: 5.0
Established by: Committee for Education in Technology 2018-06-20
Valid from: Autumn 2018

Education Cycle: Second cycle
Main Field of Study (Progressive Specialisation): Civil Engineering (A1N)
Disciplinary Domain: Technology
Prerequisites: Bachelor of Science in Engineering
Subject Area: Civil and Environmental Engineering
Grading Scale: U, 3, 4 or 5

Content

The main goal of the course is that, from a critical perspective, the students must gain an understanding of the principles and structure of a life cycle assessment (LCA). The course covers important concepts such as goal and scope, system boundaries, flow charts, functional units, allocation, inventory analysis, classification, characterisation and weighting. Special importance is placed on the students' ability to use LCA as a support for selecting between different material and energy systems.

Learning Outcomes

After passing the course the student will be able to:

Knowledge and understanding
1.1 describe strengths and weaknesses with LCA and the need for transparency in LCA reports,
1.2 describe and do simple life cycle costing (LCC).

Skill and ability
2.1 plan a LCA,
2.2 develop a flow chart for the system under study,
2.3 perform a life cycle inventory based on the inputs and outputs in the flow chart,
2.4 interpret the results of an LCA,
2.5 present, both in writing and orally, the LCA performed by the student.

Critical reflection and attitude
3.1 appraise the importance of transparency of LCAs and how they can be used when selecting between different material and energy systems,
3.2 reflect over the limitations of LCA from a sustainable development perspective.

Forms of Teaching

Teaching in the course consists of lectures, self study, discussions and exercises.

The students must also perform and present (in writing and orally) a fairly large LCA that contains all important parts.

The teaching is in Swedish or English.

The language of instruction is English.

Forms of Examination

The course is examined using the following:

- Written examination
  Learning Objectives: 2.2-2.4, 3.1
  Higher Education Credits: 2,0
  Grading Scale: U, 3, 4 eller 5
- Project
  Learning Objectives: All goals
  Higher Education Credits: 5,5
  Grading Scale: U/G

  The written examination determines the final grade of the course, which is given when both parts of the course are passed.

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.

All compulsory material is in the university's teaching platform.

Recommended:
Baumann, Henrikke & Tillman, Anne-Marie (2004). *The hitchhiker's guide to LCA: an orientation in life cycle assessment methodology and application*. Lund: Studentlitteratur

Klöpffer, Walter & Grahl, Birgit (2014). *Life Cycle Assessment (LCA) [electronic resource] : A Guide to Best Practise*. Weinheim: Wiley

Student Influence and Evaluation

The course is evaluated according to the rules for course evaluation at the University of Borås, were the students' views are collected. Analysis of these views results in a course report that is published and shared with students of subsequent 'Introduction to life cycle assessment' courses. The report also forms the base for developing the course. The person responsible for the course is responsible for this evaluation.

Miscellaneous

The course is part of the one-year Master program in civil engineering, 60 hp, but can also be studied as a non-program course.