Course syllabus

Analysmetoder för systembaserad värdering av produkter och tjänster. Livscykelanlys (Lifecycle Assessment, LCA)
Analytical Methods for Systemic Assessment of Products and Services. Lifecycle Assessment (LCA)

IMEN43, 3 credits, A (Second Cycle)

Valid for: 2018-2019 XAMIS
Decided by: PLED W
Date of Decision: 2018-03-22

General Information

Main field: Environmental Management and Policy. Depth of study relative to the degree requirements:
Second cycle, has second-cycle course/s as entry requirements.
Compulsory for: XA_EMP1
Language of instruction: The course will be given in English

Aim

The main objective is to provide an understanding of methodological principles employed by different lifecycle assessment (LCA) tools used in environmental evaluations of products and services. The focus is on bottom-up LCA, top-down Input-Output LCA, and two streamlined LCA approaches. The students will better understand their strong and weak sides (what answers these methods can/cannot provide) and train critical interpretation of results delivered by these methods.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

• Demonstrate the ability to describe the principles and rationale of different approaches for assessing the environmental impacts of products and services from lifecycle perspective, including the strong and weak sides of these approaches;

• Demonstrate the ability to interpret the results from environmental assessment studies and critically reflect upon where and how could they be applied to support decision-making.

Competences and skills
For a passing grade the student must

• Demonstrate the ability to differentiate among core characteristics of quantitative data and perform streamlined LCA using simplified calculations,

• Demonstrate the ability to work in groups on joint task, write group reports and orally present the results.

• Demonstrate the ability to apply in practice the core methodological steps of LCA (functional unit, system boundaries, allocation, data quality requirements, interpretation);

• Demonstrate the ability to plan and execute course assignments within given time limits, and applying suitable methods for completing the assignment;
Judgement and approach

For a passing grade the student must

• Demonstrate the ability to form a critical opinion about the quality of results from LCA studies and to what degree they can support decisions for lifecycle environmental improvements;
• Demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Contents

The teaching is based on a combination of lectures, seminars and assignments.

The lectures are intended to assist the theoretical learning of principles and rationale of different environmental assessment approaches. The lectures are designed to primarily assist off-class learning through individual work with course literature.

Seminars are designed to address particular methodological issues highlighted during the lectures and facilitate the training students’ skills in their practical application.

The assignments are designed for independent training of theoretical knowledge and practical skills. Assignment 1 is individual and will be used to illustrate in practice the pros and cons of a streamlined lifecycle assessment method using “Eco-Indicator’95” tool. Assignment 2 will be used to practice critical evaluation of LCA results in groups. The task is to evaluate a set of LCA studies using chosen criteria and propose conclusions regarding LCA as a decision-support tool for optimising the environmental performance of products and services.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Assessment is based on individual examination of theoretical and practical knowledge, quality of group assignment and oral presentation, and active participation in discussions during the seminars. The final grade is based on the individual exam (50%), two assignments (5% and 40% respectively) and student performance and active participation in seminars 5%). The assignments will test students’ ability to interpret the results of LCA studies and critically assess the quality of different methodological choices made by LCA practitioners. The exam will test students’ knowledge of the principles and rationale of different environmental assessment approaches. The exam will primarily prioritise testing practical application of theoretical over factual knowledge.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Admission requirements:

• Students should have been admitted to the MSc Programme in Environmental Management and Policy, and have completed a minimum of 15 credits of programme courses

The number of participants is limited to: No

The course overlaps following course/s: IMEN26

Reading list

• According to a literature list that will be available at the latest eight weeks before start of the course on the course web page.

Contact and other information
Course coordinator: Andrius Plepys, andrius.plepys@iiiee.lu.se
Course homepage: http://www.iiiee.lu.se/education/emp/curriculum