

*Course syllabus*

# Hållbarhet och resursanvändning med perspektiv på informations- och kommunikationsteknik Sustainability and Resource Use with Perspectives on Information and Communication Technology

**FMIF45, 4 credits, G2 (First Cycle)**

**Valid for:** 2023/24

**Faculty:** Faculty of Engineering, LTH

**Decided by:** PLED W

**Date of Decision:** 2023-03-27

## General Information

**Main field:** Technology.

**Compulsory for:** C2, D3

**Language of instruction:** The course will be given in Swedish

## Aim

Engineers with a Master of science in Computer science and engineering or Information and communication engineering technologies will play an important role in the development of tomorrow's technologies and products since software and information and communication technology (ICT) are deeply integrated into various technologies and industries. All enterprises, not least within technology and product development, are affected by sustainability requirements. Future engineers therefore need basic understanding on the scientific and social perspectives that underlie the sustainability requirements. ICT is dependent on an infrastructure (data centres, networks etc), which requires natural resources and energy and generates waste, but the technology can also contribute to more sustainable solutions. This course provides students with basic knowledge on the concept of sustainable development, on major environmental and resource problems, on how IT, electronics and energy use affect the possibility for sustainable development, and on the tools that can be used by society and companies in their sustainability work.

# Learning outcomes

## *Knowledge and understanding*

For a passing grade the student must

- Be able to describe the concept sustainable development from a general perspective and a company perspective
- Be able to describe some important environmental and resource problems in relation to society's requirements
- Be able to discuss how IT, electronics and energy use affects the possibility for sustainable development
- Be able to discuss principles and concepts regarding societal frameworks such as legislation and other policy instruments within the environmental area.
- Be able to discuss methods and tools that are used in the sustainability work in companies

## *Competences and skills*

For a passing grade the student must

- Be able to collect and critically evaluate information within a group project that concerns a problem related to sustainability.
- Be able to write a well-structured essay with correct language and use of sources
- Be able to orally present the group project (essay) and act as opponent to another essay.

## *Judgement and approach*

For a passing grade the student must

- Be able to demonstrate a critical approach to sustainability strategies.

# Contents

The course consists of lectures and a project (essay). The lectures address sustainable development (environmental, social and economic) from a general perspective and a company perspective and major environmental problems such as climate change, air quality and environmental toxins. The lectures also address the energy sector, resource use and waste management in relation to society's requirements, and sustainability issues related to ICT. The course also covers sustainability tools such as life-cycle assessment and eco-design and principles and concepts regarding societal frameworks such as legislation and other policy instruments within the area of environment. The project is carried out in groups, and the resulting essays will be discussed at seminars.

# Examination details

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

**Assessment:** The examination of the course consists of a written exam with grades according to the graded LTH scale (U, 3, 4 and 5), a project work (U, G) and attendance at the mandatory literature seminar. For approved project work, an approved essay is required according to set criteria, approved written opposition and active participation in the project seminar. The course as a whole is graded based on the written exam (U, 3, 4 and 5).

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.

### **Parts**

**Code:** 0119. **Name:** Examination.

**Credits:** 2,5. **Grading scale:** TH. **Assessment:** Approved examination and attendance at the mandatory discussion seminar

**Code:** 0219. **Name:** Project.

**Credits:** 1,5. **Grading scale:** UG. **Assessment:** Approved project

## **Admission**

**Assumed prior knowledge:** 60 credits within programme

**The number of participants is limited to:** No

**The course overlaps following course/s:** FMI031, FMIA01, FMIF01, FMIF05, FMIF10, FMIF20, FMIF35

## **Reading list**

- Ammenberg, J., Hjelm, O. (red.): Miljöteknik - för en hållbar utveckling. Studentlitteratur, 2013, ISBN: 978 91 44 09275-1. Due to the quick development in this field, the literature may change. This will be communicated at least eight weeks before the course starts.
- Articles and reports.

## **Contact and other information**

**Course coordinator:** Karin Ericsson, [karin.ericsson@miljo.lth.se](mailto:karin.ericsson@miljo.lth.se)

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