UNIVERSITY OF GOTHENBURG

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DIT196 Technology for a Global Sustainable Society, 7.5 credits

Teknik för ett hållbart globalt samhälle, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Computer Science and Engineering on 2016-12-20 and was last revised on 2019-02-08 to be valid from 2019-09-02, autumn semester of 2019.

Field of education: Science 100%
Department: Department of Computer Science and Engineering

Position in the educational system

The course is given within the N1COS Computer Science bachelor programme.

Main field of studies	*Specialization*
-	G1N, First cycle, has only upper-secondary level entry requirements

Entry requirements

General entrance requirements for university studies and the Swedish upper secondary course Mathematics D or Mathematics 3 c or equivalent.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

- Explain the concept of sustainable development from different dimensions and perspectives.
- Explain causes of unsustainable development and applicable examples of conditions and trends in natural and societal systems. Example: population growth, affluence

development, use of resources, consumption, economic driving forces/obstacles, lock-in effects, emissions, etc.
- Describe the professional interface towards natural and societal systems.

Competence and skills
- Use methods and tools for simple analyses of environmental effects originating from the lifecycle of a product. Example: description of resource use, emissions, environmental impact and systemic effects related to a specific technology system.
- Use problem solving and critical and creative thinking in groups in order to connect aspects of IT development and IT usage with social, ecological and economic aspects.

Judgement and approach
- Reflect on the own professional role and professional responsibility as well as the role as citizen in relation to sustainable development.
- Reflect on how facts differ from values, identify ethical dilemmas
- Apply and discuss ethical principles from facts and values.

The course is sustainability-focused, which means that at least one of the learning outcomes clearly shows that the course content meets at least one of the University of Gothenburg's confirmed sustainability criteria. The content also constitutes the course's main focus.

Course content

The course aims to introduce basic knowledge in the field of sustainable development, as well as methods and tools for more sustainable ICT development and use.

The course also aims both to provide an understanding of the complex relationships that affect, from a life cycle perspective, the sustainability of the adaptation of products and services, and to reflect on the opportunities of a computer scientist to contribute, at different levels and areas, to a sustainable society.

The different parts of the course will provide knowledge and opportunities to practice the breaking down of complex sustainability aspects into manageable sub-problems that are within the areas a computer scientist can influence.

The course content is:

- Principles in sustainable development.
- The role of the computer scientist in a sustainable society.
- Formulating a sustainable development project on the basis of principles for sustainability.

- Historical perspectives on IT and sustainable development.
- Current situation analysis.
- Case studies of ongoing IT and sustainability projects.
- Life Cycle Analysis.
- The challenge of rebound effects.
- Methods for selection and execution of IT and sustainability projects.

Sub-courses

1. **Take-home exam** *(Hemtentamen),* 4.5 credits
   Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)
   One part of the course focuses on theoretical principles in sustainable development and serves as the basis for the formulation of a vision for the project. This part is accounted for in an individual take-home exam submitted after the end of the course.

2. **Project** *(Projektarbete),* 3 credits
   Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)
   The other part of the course is a group project comprising the formulation of a sustanability vision, tools for analysng the current situation, developing and prioritising IT-based solutions to a sustainability challenge identified by the groups. The group project is accounted for in a written report and an oral presentation.

Form of teaching

The teaching is carried out through lectures, in parallel with a project conducted in groups of normally 4-7 students and presented in writting and orally.

The course follows the ABDC model designed by The Natural Step for strategic sustainable planning. The students are expected to combine broad learning related to sustainable development with the formulation of a tangible, IT-related sustainability project in groups.

Language of instruction: Swedish

Assessment

The course is assessed through an individual written take-home exam and a project done in groups of 4-7 students. The project is accounted for through a written report and an oral presentation performed in groups.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
For grade G on the whole course both parts must have been passed. For grade VG on the whole course both parts must have received VG (passed with Distinction).

Course evaluation

The course is evaluated through meetings both during and after the course between teachers and student representatives. Further, an anonymous questionnaire is used to ensure written information. The outcome of the evaluations serves to improve the course by indicating which parts could be added, improved, changed or removed.

Additional information

The course is a joint course together with Chalmers.

Course literature to be announced the latest 8 weeks prior to the start of the course.