IC1007 Human-computer Interaction: Principles and Design 7.5 credits

Människa-dator interaktion: Principer och Design

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for IC1007 valid from Autumn 2011

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Eligibility for single course students not attending a regular KTH programme:

Completed upper secondary schooling (diploma, transcript in the original language and authorized translations) incl documented proficiency in English.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The course aims at providing basic knowledge about concepts within the fields of human computer interaction and the psychology of the interaction process. Another purpose is to provide the students with tools for identifying factors affecting the communication between humans and computers in a positive and negative manner and to provide the design methods to improve that communication.

Knowledge and comprehension

The student is, after completion of the course, expected to be able to:

- give an account of basic concepts within the field of HCI (regarding human cognition, interfaces, interaction and iterative system development)
- give an account of most of the existing styles of interaction, both from a user perspective and from a developer perspective
- give an account of a large number of interaction devices and be able to decide which usage situation it is best suited for
- describe different ways to design interactive computer systems, with regard to the peoples whole situation (e.g. mobility, affection, work and leisure, etc.).

Skills and capacities

The student is, after completion of the course, expected to be able to:

- incorporate the content of a research article within the field
- analyze interactive computer systems from a usability perspective
- conduct an expert evaluation (e.g. Heuristic Evaluation and Cognitive Walkthrough) of existing interactive systems
- adapt a design of an interactive computer system to the needs of different user groups
- create simple paper prototypes.

Values and attitudes

The student is, after completion of the course, expected to be able to:

- choose relevant evaluation methods for a given specific computer system and context
- choose style of interaction and interaction device for a given user group adjusted for their tasks and situation
- argue for different solutions to a usability problem
- discuss pros and cons with an interactive computer system from the point of view of different user groups
- apply general theoretical concepts to concrete interfaces.

Course contents

The course addresses central concepts within the area of Human Computer Interaction as well as theory and methods to include limitations and potentials of humans when designing computer systems, i.e. knowledge about the human perceptual, communicative and cognitive processes. The area is clearly multidisciplinary and contains a number of topics, i.e. psychology, linguistics and graphic design. The course also addresses the methodology for planing and execution of studies in the process of constructing as well as evaluating computer systems. This consist of:

- History, perspectives and research in the area of Human Computer Interaction.
- Overview of perception and representation, awareness and memory, conceptual models and learning.
- Properties of interactive systems, the communicative situation, communicative media, interactive systems correlated to individuals, tasks and organisations, motives for improvement of interactive systems, functionality and usability, models and conflicts within models, adaptation of systems for users and tasks, learning and education, documentation, analysis of applications.

Disposition

The course consists of 10 lectures, 6 mandatory seminars and a number of assignments.

Course literature

Designing Interactive Systems, David Benyon, Second Edition, Addison Wesley År: 2010 ISBN: 9780321435330

Norman, Donald: Design of Everyday Things, Currency Doubleday, 0-385-26774-6

- Artikelsamling
- Föreläsningsbilder

Examination

- INLA - Assignments, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TENA - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

A written exam 4,5 ECTS credits and assignments and mandatory seminars 3 ECTS credits.

The grading criteria are designed with a starting point in the course goals. The goals were grouped when possible and then grading criteria were constructed for each goal/group of goals. Each sets of criteria will result in one question at the written exam, were each question will be graded A-F in stead of traditional numerical scoring. A merger of the the different questions grade will result in the final grade. The goals not in this list will be covered through the assignments. The grades on the assignments are pass or fail.

- Give an account of basic concepts within the field of HCI (regarding human cognition, interfaces, interaction and iterative system development).

A Acceptable explanations of the meaning of the concept in 9 cases out of 10

B Acceptable explanations of the meaning of the concept in 8 cases out of 10

C Acceptable explanations of the meaning of the concept in 7 cases out of 10

D Acceptable explanations of the meaning of the concept in 6 cases out of 10

E Acceptable explanations of the meaning of the concept in 5 cases out of 10

Fx Acceptable explanations of the meaning of the concept in 3 cases out of 10 and incomplete explanations in 3 cases of the remaining concepts

F Predominantly incomplete or incorrect explanations of the meaning of the concepts.

- Give an account of most of the existing styles of interaction, both from a user perspective and from a developer perspective.
- Give an account of a large number of interaction devices and be able to decide which usage situation it is best suited for.
- Choose style of interaction and interaction device for a given user group adjusted for their tasks and situation.

A For a given usage situation, be able to choose, well motivated, give an exhaustive account of and be able to adjust styles of interaction and interaction devices in an independent and reflective way.

B For a given usage situation, be able to choose, well motivated, give an exhaustive account of and be able to adjust styles of interaction and interaction devices in an independent way.

C For a given usage situation, be able to choose, well motivated, give an exhaustive account of and be able to adjust styles of interaction and interaction devices.

D For a given usage situation, be able to choose and give an exhaustive account of styles of interaction and interaction devices.

E For a given usage situation, be able to choose and give an account of styles of interaction and interaction devices.

Fx For a given usage situation, be able to choose and give a partial account of styles of interaction and interaction devices.

F Incomplete or incorrect accounts of styles of interaction and interaction devices for a given usage situation.

- Describe different ways to design interactive computer systems, with regard to the peoples whole situation (e.g. mobility, affection, work and leisure, etc.).

A Independently, innovative and exhaustively be able to describe different ways to design interactive computer systems for humans regarding many different parameters such as work, leisure, emotions, etc.

B Independently and exhaustively be able to describe different ways to design interactive computer systems for humans regarding many different parameters such as work, leisure, emotions, etc.

C Exhaustively be able to describe different ways to design interactive computer systems for humans regarding many different parameters such as work, leisure, emotions, etc.

D In broad outline be able to describe different ways to design interactive computer systems for humans regarding many different parameters such as work, leisure, emotions, etc.

E In broad outline be able to describe one way to design interactive computer systems for humans regarding many different parameters such as work, leisure, emotions, etc.

Fx Incompletely be able to describe different ways to design interactive computer systems for humans regarding many different parameters such as work, leisure, emotions, etc.

F Incorrectly be able to describe different ways to design interactive computer systems for humans regarding many different parameters such as work, leisure, emotions, etc.

- Adapt a design of an interactive computer system to the needs of different user groups.
- Argue for different solutions for a usability problem.
- Discuss pros and cons with an interactive computer system from the point of view of different user groups.

A Be able to argue innovative, independently and exhaustively for and against a given solution to a usability problem for user groups with different cognitive, physiological and/or social prerequisites.

B Be able to argue, independent and exhaustive for and against a given solution to a usability problem for user groups with different cognitive, physiological and/or social prerequisites.

C Be able to argue exhaustive for and against a given solution to a usability problem for user groups with different cognitive, physiological and/or social prerequisites.

D Be able to argue for and against a given solution to a usability problem for user groups with different cognitive, physiological and/or social prerequisites.

E Be able to argue for and against a given solution to a usability problem for a certain user group.

FX Be able to argue for or against a given solution to a usability problem for a certain user group.

F Neither be able to argue for nor against a given solution to a usability problem for a certain user group.

- Choose relevant evaluation methods for a given specific computer system and context.

A Be able to choose a relevant evaluation method for a specific computer system and context with a well grounded and reflective motivation.

B Be able to choose a relevant evaluation method for a specific computer system and context with a well grounded motivation.

C Be able to choose a relevant evaluation method for a specific computer system and context with a sound motivation.

D Be able to choose a relevant evaluation method for a specific computer system and context with a motivation.

E Be able to choose a relevant evaluation method for a specific computer system and context.

Fx Be able to choose a resonable evaluation method for a specific computer system and context.

F Choose an incorrect evaluation method or incorrect motivation.

 • Apply general theoretical concepts to concrete interfaces.

A Be able to apply a theory independently and innovatively on a given interface situation.

B Be able to apply a theory independently on a given interface situation.

C Be able to thoroughly apply a theory on a given interface situation.

D Be able to apply a theory on a given interface situation

E Be able to partially apply a theory on a given interface situation.

Fx Be able to weakly apply a theory on a given interface situation.

F Not be able to apply a theory on a given interface situation

Merger for final grade on the exam

A At least 3 A, at least 2 C and nothing bellow E

B At least 3 B, at least 2 D and nothing bellow E

C At least 3 C and nothing bellow E

D At least 3 D and nothing bellow E

E At least E on all the questions

Fx At the most 1 Fx or At least 2 B and at the most 2 Fx

F The rest

Ethical approach

 • All members of a group are responsible for the group's work.

- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.