TIA109 Information Visualization, 7.5 higher education credits

Information Visualization, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by The IT Faculty Board on 2010-12-21 and was last revised on 2017-06-16 by Department of Computer Science and Engineering to be valid from 2017-08-20, autumn semester of 2007.

Field of education: Science 100%
Department: Dep of Applied Information Technology

Position in the educational system

The course is offered as a single subject course.

The course can be part of the following programmes: 1) Computer Science, Master's Programme (N2COS), 2) Applied Data Science Master's Programme (N2ADS), 3) Game Design & Technology Master's Programme (N2GDT) and 4) Computer Science, Bachelor´s Programme (N1COS)

Main field of studies	*Specialization*
Computer Science-Interaction Design	A1F, Second cycle, has second-cycle course/s as entry requirements
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Entry requirements

To be eligible for the course the student must have a Bachelor degree of 180 credits. Additionally, the course TIG095 Human Computer Interaction 7.5 credits, or the equivalent is required. In addition, students need to have successfully completed a course in Graphical Interfaces (TIA106) 7.5 credits at advanced level.

To be eligible for this course as a programme student in Science Bachelors Programme

N1COS, the student must have passed at least 90 credits in programme courses and the additional courses TIG095 Human Computer Interaction 7.5 credits and Graphical Interfaces (TIA106) 7.5 credits at advanced level.

Learning outcomes

The course aims to give an understanding in how information can be presented to provide efficient and effective knowledge transfer, as well as how to design interactive systems that allow users to easily adapt these presentations depending on task and context.

After completion of the course the student should be able to

Knowledge and understanding

- realize the difference between well-known information visualization techniques, including the pros and cons they have in respect to types of data, functionality, adaptability, and scalability,
- describe how the cognitive and perceptive abilities of humans affect the possibilities of information visualization.

Skills and abilities

- create concepts for information visualizations taking into consideration specific data sets, users, technical platforms, and use context,
- iteratively develop visualizations from early non-functional sketches through mock-ups to functional prototype making use of user feedback.

Judgement and approach

- compare different interactive visualization techniques to evaluate their feasibility for both generic and specific use,
- analyze and provide creative criticism on specific solutions to visualize information.

Course content

The course provides an overview on how to design and analyze computer applications, based on knowledge of the human sensory and cognitive system. Screen based as well as other types of interactive interfaces, such as auditory and haptic ones, are discussed as means to efficiently and intelligibly present information. Not only actual applications are covered, but also the development of methods to pre-process data and the creation of interfaces so users can personalize the information presentations available so it suits

their needs.

Form of teaching

The course consists of a series of lectures, one exercise, and a project.

The course is structured into several different modules, each consisting of reading material taken from academic research within one area of visualization and exercises or projects within these areas. The exercises and projects are done in groups with the exception of the final individual assignment. Areas covered include specific techniques with information visualization, e.g. data visualization, scientific visualization and virtual reality.

Language of instruction: English

Assessment

The course is examined by means of three modules:

- Group Work: Design Exercise 1.5 credit (fail/pass)
- Design Project 2.0 credits (fail/pass)
- Written Examination 4.0 credits (fail/pass/pass with distinction)

A student who has failed a test twice has the right to change examiners, if it is possible. A written application should be sent to the Department.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
To receive a passing grade for the whole course, a student must have a passing mark on the written exam, and both the exercise, and the project. To pass with distinction, a student must have passed with distinction the written exam and have a passing mark on both the exercise, and the project.

Course evaluation

After completion of the course the students are to be given the possibility of participating in course anonymously. Continuous evaluation will be used, including three meetings between teacher(s) and student representatives. Additionally, the course

will be evaluated with a course questionnaire, and discussed with the student representatives.