Linnæus University

Dnr: LNU-2024/81

Course syllabus

Faculty of Technology
Department of Computer Science and Media Technology

4DT913 Vetenskapliga metoder inom datavetenskap, 5 högskolepoäng
Scientific Methods in Computer Science, 5 credits

Main field of study
Computer Engineering

Subject
Informatics/Computer and Systems Sciences

Level
Second cycle

Progression
A1N

Date of Ratification
Approved 2024-01-15.
The course syllabus is valid from autumn semester 2024.

Prerequisites
90 credits in Computer Science (including a degree project at Bachelor level).

Objectives

After completing the course the student shall be able to:

- describe the research state of the art within an area of computer science or software engineering in great detail
- describe research directions, positions, and the most common research methods within an area of computer science or software engineering
- independently plan a research project within computer science of software engineering with relevant research questions and suitable methods
- find, critically assess, and present scientific results

- critically asses the choice of method and its use in a scientific study
- analyze how the results of a scientific study increase our understanding and knowledge of a phenomenon or similar
- reason about how a scientific study contributes to society and technological development, e.g., how the results can be used by or transfered to the software industry
- reason about ethical considerations and analyze how they are managed in a study.

Content

The course consists of a seminar series where students present and discuss scientific articles to advance their understanding of current research within computer science and software engineering, and their ability to critically evaluate and discuss research methodology and results.

- Scientific methods withing computer science and software engineering, with a focus on a by the student selected area.
- Academic writing and oral presentation.
- Critical analysis of scientific articles and presentations.
- How to plan a research project.
- Ethical considerations and these are handled.

Type of Instruction

The instruction consists of a small series of lectures that introduces the course structure and required theory as well as a seminar series where students present and discuss scientific articles together with researchers within the field. The teacher will, if needed, guide the discussion so that all relevant topics are addressed, e.g., ethical considerations. The project plan is produced together with a researcher (that will act as the thesis supervisor).

Examination

The course is assessed with the grades A, B, C, D, E or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student’s performance is assessed as fail (i.e. received the grade F).

Assessment of student performance is made through presentation of scientific articles in groups, opposition in groups, and a project plan in groups.

To pass the course, grade E or higher is required for all parts. The final grade is decided from: presentations (20%), opposition (20%), and project plan (60%).

Resit examination is offered in accordance with Linnaeus University’s Local regulations for courses and examination at the first- and second-cycle levels. In the event that a student with a disability is entitled to special study support, the examiner will decide on adapted or alternative examination arrangements.

Objectives achievement

The examination of the course is divided as follows:

Module 2401 Presentations 1.0 credits with the grading system AF
Module 2402 Opposition 1.0 credits with the grading system AF
Module 2403 Project plan 3.0 credits with the grading system AF

The examination elements are linked to the course objectives in the following ways:
Module 2401 links to the course objectives: A.1,B.2,C.1,C.2
Module 2402 links to the course objectives: B.2,B.3,C.3
Module 2403 links to the course objectives: A.1,A.2,B.1,B.2,B.3,C.1,C.2,C.3

Course Evaluation

A course evaluation should be conducted during the course or in connection with its conclusion. The results and analysis of the completed course evaluation should be promptly communicated to students who have completed the course. Students participating in the next course instance should be informed of the results of the previous course evaluation and any improvements that have been made, no later than at the start of the course.

Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course:
4DV502, 5 credits

Other Information

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest. The course is conducted in such a way that the course participants' experiences and knowledge are made visible and developed. This means, for example, that we have an inclusive approach and strive for no one to feel excluded. This can be expressed in different ways in a course, for example by using the gender neutral example.

Required Reading and Additional Study Material

The require readings are decided together with supervisor and should consist of scientific articles and books that can either be downloaded or are available from the university library (or the supervisor's library)