Linnæus University

Jnr: 2014/3175–3.1.2

Course syllabus

Faculty of Technology
Department of Computer Science

4DV802 Grafritning, 7,5 högskolepoäng
Graph Drawing, 7.5 credits

Main field of study
Computer Science

Subject Group
Informatics/Computer and Systems Sciences

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by Faculty of Technology 2014-10-03
The course syllabus is valid from autumn semester 2015

Prerequisites
90 credits in Computer Science including a course in Algorithms and Advanced Data Structures 7.5 credits (1DV516) or equivalent.

Objectives
Upon completion of the course, the student should:

- be acquainted with the most important algorithms for visualization of graphs
- know how these algorithms work
- have the capability to apply these algorithms to specific problems and know about their advantages and drawbacks
- be able to analyze these algorithms and to prove their correctness where appropriate
- be able to implement graph layout algorithms
- have a good overview of actual graph drawing systems

Content
This course gives an introduction to the most important techniques and approaches for drawing graphs and networks. The focus is on algorithms, the course enables the student to implement own graph layout tools.
The course contains graph drawing algorithms for:

- directed graphs
- undirected graphs
- trees
- directed acyclic graphs

The course also covers:

- force-directed drawings
- layered drawings
- orthogonal drawings
- planarity tests and planarization algorithms
- viewpoints on graph drawing from an information visualization perspective

Type of Instruction
Lectures, seminars, self-studies, excercises and/or practical work.

Examination
The course is assessed with the grades A, B, C, D, E, Fx 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 the student's performance is made through written or oral exams as well as presentation of compulsory practical/theoretical assignments. To be allowed to attend the exam requires passed assignments. This means that successfully finished assignments are a prerequisite for doing the exam. If a student does not pass an individual assignment, then he/she will get a chance for an improvement that has to be submitted within an appropriate deadline.

The type of assessment used in the course (written/oral) and deadlines will be decided at the beginning of the course. Students who do not pass the regular examination are given the opportunity to do a resit examination shortly after the regular examination.

Course Evaluation
A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

Credit Overlap
This course cannot be part of a degree in combination with another course in which the content fully or partly correspond to the content of this course: 4DV302 Graph Drawing, 7.5 credits

Other
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.

Required Reading and Additional Study Material
Required reading
di Battista, G., Eades, P., Tamassia, R., and Tollis, I, *Graph Drawing: Algorithms for the Visualization of Graphs*. Prentice-Hall, 1999. Pages 200 (387).

Kaufmann, M. and Wagner,D, *Drawing Graphs: Methods and Models. Lecture Notes in Computer Science 2025*, Springer, 2001. Pages 220 (312).

DV, *Distributed material and research articles*. Pages 300 (300).