



## Course syllabus

Faculty of Technology  
Department of Computer Science

4DV605 Tillämpad programanalys, 7,5 högskolepoäng  
Applied Program Analysis, 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 2015-02-18  
The course syllabus is valid from autumn semester 2015

### **Prerequisites**

90 credits in Computer Science or equivalent.

## Objectives

Upon completion of the course, the student should be able to:

- describe advanced state-of-the-art program analysis techniques
- give an account of state-of-the-art Compiling program analysis techniques to problems in Software Engineering
- apply novel approaches to program analysis

## Content

The course gives an introduction to general program analysis techniques. It introduces standard and advanced analysis techniques of programs.

The first part introduces intermediate representations of program: Attributed Abstract Syntax Trees, Containment Tree, Class Hierarchy, Call Graphs.

The second part increases the level of abstraction. Software metrics as a general technique and its application in the development and re-engineering processes, is presented. The second part also includes design patterns/anti-pattern and their use in detecting connectors and design flaws in systems. Different techniques of grouping classes into components, is presented.

Dominance analysis, concept lattice based approaches and metrics based groupings, is presented.

In the third part, we sketch techniques of software visualization required to understand the results of the aforementioned techniques.

### Type of Instruction

Lectures, seminars and self studies.

### 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).

Assessments of student performance consist of written and/or oral examinations and/or presentation of mandatory assignments. The assessment method will be decided at the start of the course.

Students who do not pass the regular examination are given the opportunity to do a re-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.

### 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**

Relevant literature / papers will be selected and provided at the start of the course.