



## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### **DIT185 Software Analysis and Design, 7.5 credits**

Mjukvaruanalys och konstruktion, 7,5 högskolepoäng

*First Cycle*

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#### **Confirmation**

This course syllabus was confirmed by Department of Computer Science and Engineering on 2021-09-30 to be valid from 2022-01-17, spring semester of 2022.

*Field of education:* Science 100%

*Department:* Department of Computer Science and Engineering

#### **Position in the educational system**

The course is a compulsory course within the Software Engineering and Management Bachelor's Programme. The course is also a single subject course at the University of Gothenburg.

The course can be part of the following programmes: 1) Computer Science, Bachelor's Programme (N1COS), 2) Software Engineering and Management Bachelor's Programme (N1SOF) and 3) Software Engineering and Management, Bachelor's Programme (N1SEM)

#### *Main field of studies*

Software Engineering

#### *Specialization*

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

#### **Entry requirements**

To be eligible for this course, students must have successfully completed 7,5 higher education credits in object oriented programming (for example DIT042 Object-Oriented Programming, 7.5 hec).

#### **Learning outcomes**

On successful completion of the course the student will be able to:

*Knowledge and understanding*

- explain how to represent a software system using UML models,
- explain guidelines and heuristics for performing a domain analysis,

*Competence and skills*

- analyze and design software systems using object oriented techniques,
- create an UML model that is an abstract representation of the source code,
- use tools for domain and requirements analysis, modeling, program visualization, and object oriented program design,

*Judgement and approach*

- analyse how software design principles and patterns impact software quality,
- reflect on - and resolve inconsistencies between various models used as part of a single system's design.

**Course content**

The purpose of this course is to familiarize students with concepts, methods, and tools for object oriented analysis and design of software systems, with emphasis on methods applied in large product development projects. The course introduces common design principles and patterns that support the development of maintainable, reusable and extensible software. The course gives an introduction to UML.

Analysis- and design models are expressed using UML models such as use case diagrams, class diagram, sequence diagrams, and state diagrams. Furthermore, techniques and guidelines are introduced for analysis of software domain and requirements.

*Sub-courses*

- 1. Written exam** (*Tentamen*), 4.5 credits  
Grading scale: Pass with distinction (5), Pass with credit (4), Pass (3) and Fail (U)
- 2. Assignments** (*Inlämningsuppgifter*), 3 credits  
Grading scale: Pass (G) and Fail (U)

**Form of teaching**

The teaching consists of lectures, group work, exercises, as well as supervision in connection to the exercises.

*Language of instruction:* English

**Assessment**

The course is examined by an individual written exam carried out in an examination hall at the end of course and written assignments normally carried out in groups of 2-3 students. The assignments part is examined on the basis of solutions to compulsory problems handed in during the course and on the basis of individual contribution to the group work.

Students are required to complete written self- and peer-assessment forms during the course which will be input to the individual contribution.

Retake examinations of the assignments part consist of written individual assignments.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course was given.

**Grades**

The grading scale comprises: Pass with distinction (5), Pass with credit (4), Pass (3) and Fail (U).

In order to pass the course both the assignments and the written hall examination have to be approved. The final grade in the course is decided from the grade of the written hall examination.

**Course evaluation**

The course is evaluated through a meeting after the course between teachers and student representatives. Further, an anonymous questionnaire is used to ensure written information. The outcome of the evaluations serves to improve the course by indicating which parts could be added, improved, changed or removed.

**Additional information**

Course literature to be announced 8 weeks prior to the start of the course.

The course replaces the course DIT184, 7.5 credits. The course cannot be included in a degree which contains DIT184. Neither can the course be included in a degree which is based on another degree in which the course DIT184 is included.