Linnæus University

Jnr: 2021/2381-3.1.2.2

Course syllabus

Faculty of Technology

Department of Computer Science and Media Technology

1DV502 Objektorienterad programmering, 7,5 högskolepoäng
Objectoriented programming, 7.5 credits

Main field of study
Computer Science

Subject Group
Informatics/Computer and Systems Sciences

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved 2020-03-30
Revised 2021-06-17 by Faculty of Technology. Assessment methods are revised.
The course syllabus is valid from spring semester 2022

Prerequisites
Introduction to programming (1DV501), 7.5 credits or Module A in 1DV025, 7.5 credits or equivalent

Objectives

After completing the course the student is expected to:
Knowledge and understanding:

- A.1 explain fundamental concepts in object oriented programming such as classes, objects, messages, inheritance and polymorphism
- A.2 explain the concepts modularisation, abstraction and encapsulation
- A.3 use and motivate the use of some common design patterns
- A.4 use the most common constructs in UML's class- and sequence diagrams, as well as
- A.5 describe how and when modelling using, for example, UML is used in software development

Ability and skill:

- B.1 implement programs using several classes
- B.2 perform unit tests
- B.3 create class and sequence diagrams according to UML and be able to implement and test them from the UML model
- B.4 implement some commonly used design patterns.

Evaluation and approach:

Evaluation and approach:

- C.1 reason about different design alternatives for a give problem, as well as
- C.2 make a conscious choice of design patterns in different problem scenarios.

Content

This is an introductory course in object oriented analys, design and programming. The first part teaches the programming language Java and important concepts in object oriented programming (such as classes, objects, inheritance, polymorphism and encapsulation). This part requires some programming experience. The second part of the course presents object oriented analys and design as well as UML.
The following parts are covered:

- Introduction to the software development process and how models fit in the process
- Fundamental program constructs in Java such as types, statements, classes, methods, fields and exceptions
- Object oriented concepts such as abstaction, modularisation, encapsulation, inheritance, interfaces and polymorphism
- Unit testing using JUnit
- Object oriented modelling with UML class and sequence diagrams
- Some commonly used design patterns such as Singleton, Iterator, Observer and Factory.

Type of Instruction

Teaching consists of lectures, teacher assisted practicals, supervision in group and a written exam. The programming tasks are individual and project and presentations are done in pairs. Attendance at some activities may be mandatory.

Examination

The examination of the course is divided as following:

Code	Appellation	Grade	Credits
2201	Assignment 1	AF	1.00
2202	Assignment 2	AF	1.00
2203	Assignment 3	AF	1.00
2204	Assignment 4	AF	1.00
2205	Exam	AF	3.50

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 accomplishment is done with programming tasks and a written exam. To pass the course, at least the grade E is needed for all activites. The final grade is decided from programming tasks (40%) and the exam (60%).
Reexamination will be offered in accordance with local rules for course and examination at Linneaus University.
If the university has decided that a student is entitled to special pedagogical support due to disability, the examiner has the right to issue an adapted assessment or that the student performs the assessment in an alternative way.

Objectives achievement

The examination parts are linked to the learning outcomes as follows:

Goal	2201	2202	2203	2204	2205
A.1	✓	✓	✓		✓
A.2		✓	✓		✓
A.3				✓	✓
A.4		✓		✓	✓
A.5		✓		✓	✓
B.1	✓		✓	✓	
B.2			✓	✓	
B.3		✓		✓	✓
B.4				✓	
C.1		✓	✓	✓	✓
C.2				✓	✓

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 1DT904, 5 credits, 1DV506, 7.5 credits, 1DV507, 7.5 credits and 1DV604, 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:

- Horstmann, Cay. S., Core Java SE 9 for the Impatient, 2nd edition, Pearson, 2017 (ISBN-13: 978-0-13-469472-6). Pages: 300 out of 500.
- Weistfeld, Matt, The Object-Oriented Thought Process, fifith edition, Pearson, 2019 (ISBN-13: 978-0-13-518196-6). Pages: 200 out of 200.