



## Course syllabus

Faculty of Technology

Department of Informatics

1IK153 Datastrukturer, databaser och grafisk användargränssnitt med ett objektorienterat programmeringsspråk, 7,5 högskolepoäng

1IK153 Datastructures, Databases and Graphical user interfaces with an Object Oriented Programming Language, 7.5 credits

### **Main field of study**

Informatics

### **Subject Group**

Informatics/Computer and Systems Sciences

### **Level of classification**

First Level

### **Progression**

G1F

### **Date of Ratification**

Approved by Faculty of Technology 2016-10-17

The course syllabus is valid from autumn semester 2017

### **Prerequisites**

Introduction to Object Oriented Programming (1IK143), 7.5 credits and Database Design, 15 credits (1IK013) or similar.

## Objectives

After the course, the student should be able to:

- explain foundational linear and non-linear data structures
- explain simple tree structures
- use different searching and sorting algorithms on different data structures
- use databases in an object oriented programming language
- create simple graphical user interfaces with the help of an object oriented programming language and with a connection to a database.

## Content

The course aims to give students an understanding of how data is stored and processed in information systems created with an object-oriented programming language. Easier abstract data structures such as linked lists, queues, and stacks are to be used, but also the binary tree structures. The student will learn the relationship between data structures

and algorithms used on them and when the combination of the data structure and algorithm works best to solve a problem. Furthermore, the student should use external databases for storing and retrieving data in a stable manner. The course will also introduce the graphical user interface is created in an object oriented programming language and students will be able to create one where the earlier stages included.

### **Type of Instruction**

Instruction consists of lectures and exercises. Exercises are solved individually.

### **Examination**

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

The laboratory work can get Fail or Pass. The course ends with a written exam. After approved laboratory exam determines final grade.

### **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.

### **Required Reading and Additional Study Material**

#### **Mandatory literature**

Liang, Daniel Y, Introduction to Java Programming (Comprehensive Version), latest edition, Pearson Education Limited (500 pages of 1300 pages)

Koffman, Elliot B., Wolfgang, Paul A. T., Data Structures: Abstraction and Design using Java, latest edition, Wiley (400 of 650 pages)