Linnæus University

Programme syllabus

Faculty of Technology

Påbyggnadsutbildning inom datavetenskap, kandidatexamen, 60 högskolepoäng

Complementary studies for a Bachelor degree in Computer Science, 60 credits

Level
First Level

Date of Ratification
Approved 2015-11-13
Revised 2016-12-09 by the Faculty Board within the Faculty of Technology
The programme syllabus is valid from autumn semester 2017

Prerequisites
120 credits of which at least 60 credits must be in Computer Science or the equivalent.

Description of Programme

The complementary education shall together with previous studies give the student in-depth knowledge in the Computer Science field. After the education, the student will be well prepared for software development work in systems and engineering projects. It also prepares for studies at advanced level in Computer Science.

Students should also see opportunities to start their own businesses.

The courses in the program are focused on software development with courses in architecture, testing and other basic skills for software developers. The programme provides some room for elective courses, which students can strengthen their previous profile.

Objectives

Knowledge and understanding
For a Degree of Bachelor students must

- demonstrate knowledge and understanding in their main field of study, including knowledge of the scientific basis of the field, knowledge of applicable methods in the field, in-depth knowledge of some part of the field and a general sense of current research issues.

Skills and abilities
For a Degree of Bachelor students must

- demonstrate an ability to seek, gather and critically interpret information that is

relevant to a problem and to critically discuss phenomena, issues and situations;
- demonstrate an ability to independently identify, formulate and solve problems and to perform tasks within specified time limits;
- demonstrate an ability to present and discuss information, problems and solutions in dialogue with different groups, orally and in writing; and
- demonstrate the skills required to work independently in the field that the education concerns.

Judgement and approach
For a Degree of Bachelor students must

- demonstrate an ability to make assessments in their main field of study, taking into account relevant scientific, social and ethical aspects;
- demonstrate insight into the role of knowledge in society and into people's responsibility for how knowledge is used; and
- demonstrate an ability to identify their need of further knowledge and to upgrade their capabilities.

Programme specific objectives
After completion the student should be able to:

- create safe, robust and user-friendly applications for different types of devices; design, analyze, and validate complex software systems; implement projects including requirements specification, software design and continuous delivery to the system environment (implementation)
- understand the fundamental principles of entrepreneurship and business development.

Content
Organization
The programme is administered by a program coordinator. The quality of the programme, its development and connection to the working life is ensured by the Programme Board, which manages the other courses in Computer Science.

Programme Overview
The programme comprises 60 credits and includes a final degree project of 15 credits. The education is mainly focused on courses in Computer Science (field of study), but it also provides oppertunities to select courses outside the subject. The language of instruction for most of the courses in Computer Science is English.

Programme courses

Mandatory courses

Computer Science (G2F), 7,5 credits - Foundations of Software Technology gives an introduction to software testing, studies of more complex data structures and algorithms and time complexity.

Computer Science (G2F), 7,5 credits - The course Software Architecture covers the software's conceptual architecture and its impact on reusability, and modeling principles of architectural design.

Business Administration (G1N), 7,5 credits - The course Entrepreneurship provides knowledge about the concepts of mission, business model and business development, as well as strategies for starting and developing sustainable and growing companies.

Computer Science (G2E), 15 credits - Degree Project at Bachelor level

A selection of elective courses

Computer Science (G2F), 7,5 credits - Object Oriented Analysis and Design includes knowledge of object-oriented analysis and design, gives the basics of the modeling language UML and how the design will be implemented in an object oriented programming language.

Computer Science (G2F), 7,5 credits - The course Practical agile system is a practical course where the goal is to understand the importance of the development environment for an agile development project. In the form of projects, the students will learn how to select, configure, and use tools for agile systems.

Computer Science (G2F), 7,5 credits - Software testing covers introduction to software testing with terminology and standard approches, different test tools, and the study of the testing process.

Computer Science (G2F), 7,5 credits - The course Continuous Delivery includes studies of automatic test systems for the integration of newly developed software into existing software systems.

Computer Science (G2F), 7,5 credits - The course Database Theory provides the technical and conceptual basis for how a database system works internally and how the system can be exploited through query languages and visual interfaces.

Computer Science (G1F), 7,5 credits - The course Computer Graphics offers an introduction into the most important theoretical and practical aspects of computer graphics. It provides foundations such as illumination or color models as well as discuss basic techniques and algorithms used in 2D and 3D graphics. The content is exercised and deepened in context of theoretical and practical practical assignments by using OpenGL.

In cases where the student already possesses knowledge equivalent to the courses referred to the student should chose alternative courses in consultation with the programme coordinator. This is done partly to give the student a personal profile, partly to ensure that local graduation requirements and specified programme objectives are met.
In order to meet the local requirements for a bachelor's degree students are required to have courses equivalent to 30 credits outside of the main subject.

Community Contacts
Within the framework of the programme, students have the opportunity to implement their thesis together with a company or another external organization. In these cases the problem is defined in cooperation with the company and the work is done to a large extent at the company or the external organization.

Studies Abroad
The students take part of the entire range of agreements with foreign universities that are offered to students at Linnaeus University. Study abroad is done in consultation with the programme coordinator and is done during the first semester.

Scope of programme

In education, working with sustainable development by ensuring that students gain skills that will be relevant and applicable for a longer period of time. The acquired knowledge is therefore time-independent and more a general nature. Regarding sustainable development, we refer here to people and their needs and how the technology can ensure that those needs continue to be met.

The internationalization perspective within the programme is met mainly by providing the opportunity for collaboration with universities abroad, but also through the inspiration and learn from how universities internationally conducts their teaching and research in Computer Science.

Quality Development

Course evaluations are carried out for all courses in the programme. Every year there is also an annual programme evaluation. It is predominantly the programme council that monitors quality assurance and ongoing development of programme. Students are represented in all these bodies and participate in course and programme evaluations. Both the programme and course evaluations are filed and are available for inspection at the University.

Degree Certificate

After completing programme studies, corresponding to the requirements expressed in the Higher Education Ordinance Degree Ordinance as well as Linnaeus University Local Degree Ordinance, the student may apply for a degree. Those who have completed the programme may obtain the following degree:

Filosofie kandidatexamen
Huvudområde: Datavetenskap
Bachelor of Science
Main field of study: Computer Science

The degree certificate is bilingual (Swedish/English). The Degree Certificate is accompanied by a Diploma Supplement (in English).

Other Information

Some programme courses allow students to participate in excursions, practical training, internship and studies abroad. These activities are not mandatory but may incur costs that the students must normally bear themselves. In connection to the program start and termination, representative lunches / equivalent may occur.