Master Studies in
Computer Science

Description

Computer Science focuses on the study of the scientific foundations for information, computation, and communication, and on the practical techniques for implementing them in computer systems. This is a very broad area of science spanning from the theory of computing, through programming, to cutting-edge development of computing solutions for large distributed systems, including cloud-based systems. Computer Science offers a solid foundation enabling graduates to adapt quickly to new ideas, new technologies, and to multidisciplinary fields. Traditional subfields of Computer Science are algorithmics, computability, software development and verification, programming language theory, computer graphics, databases, compilers, and others.

This two-year full-time study programme gives a broad basis across different areas of Computer Science. It provides the students with the necessary knowledge and skills for a multitude of careers in the software industry, in high-performance computing, and in computational biotechnology. It also provides the required background for doctoral research in Computer Science.

Objectives of the Programme

During the programme the students may acquire the following skills depending on the modules they choose in their studies:
- Understanding the scientific principles of computers and software technology and being able to apply them to a multitude of problem domains;
- A thorough understanding of the software development process, including design, implementation, documentation, and verification;
- Developing analytical skills regarding the architecture, quality, trustworthiness, and reliability of computer systems;
- Obtaining skills in the design of distributed systems and high-performance applications;
- Getting familiar with advanced computational techniques in biology;
- Developing good communication and team-work skills;
- Obtaining knowledge and competence for a career in the software industry, in high-performance computing and in the computational biotechnology industry.

Admission Requirements

The programme is open to those holding a Bachelor's degree in Computer Science, Computer Engineering, or a closely related field. Applicants should have completed at least 25 ECTS of courses in Mathematics as part of their Bachelor degree studies. Sufficient knowledge in English language is also required. Participation is limited to 10 persons.

Degree awarded
Master of Science in Computer Science

Duration
2 years

Credits
120 ECTS

Language of instruction
English

Location
Åbo Akademi University
Turku, Finland

Programme start
Late August/ September

Application deadline
February 15, 2012

Fees
The only fee is the membership in the Student Union of Åbo Akademi (approx. 100 euro per year)

Study programme overview: 120 ECTS

Main subject studies 90 ECTS

- Advanced studies in Computer Science, 60 ECTS.
  Mandatory studies, 20 ECTS.
    - Project course, 10 ECTS.
    - Logic for computer science, 5 ECTS.
    - Specification methods, 5 ECTS.

Other studies, 40 sp. to be selected from the following modules. Parts of modules may be combined into an individual study plan

Software theory	Computational systems biology
- Formal methods - Invariant-based programming - Program derivations - Program verification - Adv. text algorithms	- Introd. to bioinformatics - Introd. to computational and systems biology - Computational biomodeling - Formal methods for biology - Algorithms in bioinformatics
Software systems	High-performance computing
- Software safety - Software architectures - Software quality - Network software	- Parallel programming - Code optimization - Introd. to computer graphics - Adv. computer graphics

- Master of Science thesis, 30 ECTS.

Mandatory language courses, 5 ECTS.
Swedish as a foreign language, level 1, 5 ECTS.

Optional studies, 25 ECTS.
Optional studies can be taken from any subject. Students may choose to take more studies in Computer Science, or take studies in another subject such as Software Engineering, Embedded systems, Information Systems, Mathematics and Statistics, and/or Biosciences. Courses may be selected from more than one subject.

Department of Information Technologies

The Master Studies in Computer Science are offered by the Department of Information Technologies at Åbo Akademi University. The department provides education in Computer Science, Computer Engineering and Information Systems, at the bachelor's, master's and doctoral levels. The department is located in the Turku Science Park area, in the ICT-House, where research groups and academic programmes meet, interact and collaborate with ICT companies. The study facilities are brand-new and equipped with the latest technology.

Career prospects

When graduating, the students will have both a good basis for starting PhD studies, as well as solid practical competences for successful careers as software engineers, software designers, software analysts, or computational scientists. The numerous fields in which computer systems are applied ensure a wide range of career opportunities in Finland and abroad. Finland is a high-tech-intensive country with a strong demand for such graduates.

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