Computer Science

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Faculty	Faculty of Electrical Engineering and Computer Science
Type of study	Bachelor
Language of instruction	English
Code of the programme	B0613A140010
Regular period of the study	3 years
Cost	50,000 CZK per semester
Coordinating department	Department of Computer Science
Coordinator	Ing. Tomáš Fabián, Ph.D.
Keywords	software design and development, computer graphics, computer systems and databases, intelligent systems, software engineering

About study programme

The graduate of The Bachelor Computer Science Program is a professional with knowledge and skills that meet internationally recognized standards. The bachelor study provides him/her excellent ability to orientate him/herself on the evolving labor market. During the study, the ratio between knowledge and skills is very carefully balanced, even concerning the individual interest of the student. Also though new technologies are still emerging and promoting, the background of the bachelor’s degree provides excellent potential for further professional growth needed to adapt to new trends in technology development and the ability to be successful after graduation. In the case of a broader interest in the field, the graduate of the bachelor program is well-prepared to continue the master’s degree of the Computer Science program.

Graduate's employment

The goals of the study program correspond to the demand of the labor market. They are based on the typical application of graduates in companies focused on software development as a software developer, in companies and offices as an administrator of HW and SW systems and networks, and as an erudite professional in companies engaged in selling HW and SW.

Study aims

The Computer Science study program aims to educate graduates with broad practical skills and basic theoretical knowledge corresponding to international standards and practice requirements. Thanks to this, the graduate has a clearly defined and understandable position on the labor market and has a level of knowledge and skills that distinguish him from competitors without a bachelor's degree in computer science.
Teachers are experts in educational, research, and development activities in various areas of Computer Science. Thanks to their expertise, they have an excellent overview of needs and essentials for graduates' education and future work. Moreover, they are open to discussing many Computer Science topics and collaborating with active and talented students on exciting research and development activities. One of the other opportunities for active and competent students is working in software companies in our region to obtain new knowledge and skills and a new perspective on practice.
With the expected growth of technology-oriented companies in our region and the demand for technically educated specialists, the graduates has a high chance of success in the labor market. The acquired bachelor's degree enables the graduate to specialize further and continue in the master's degree program in Computer Science or other related programs.

Graduate's knowledge

The graduate acquires the necessary knowledge of mathematics and theoretical computer science as a theoretical background. The theoretical knowledge is needed to understand the essence of Computer Science as an independent discipline, and its division into

three parts: theoretical, computer systems, and application-oriented subdisciplines. The acquired knowledge enables the graduate to understand the relationships between individual parts of computer science and its concepts, common approaches, and methods, including conditions and limitations for their practical use. Thanks to the theoretical foundations, techniques, tools, and methods, the graduate has the prerequisites for flexible adaptation to practice requirements, especially in software development, maintenance of SW systems, and technical skills necessary for their operation.

Graduate's skills

In the professional part of the profile, the graduate acquires skills in computer systems and application-oriented subdisciplines in the field of software engineering. Great emphasis is placed on software design and development, on the maintenance of SW and HW systems, on selected parts of computer graphics, and the basics of data analysis and intelligent systems. These are mainly technical skills applicable in computer and database systems management, software design and development, computer graphics, and data analysis. These skills enable the graduate to solve common practical problems in the field within a clearly defined task, including independent decision-making on the appropriate procedure, which is based on a professionally substantiated assessment of information relevant to solving the problem.

Graduate's general competence

During the study of individual parts and subdisciplines of Computer Science, methods activating students are applied. Discusses in seminars are focused not only on the technical aspects of the problems but also on social, ethical, and other non-technical contexts. Graduates have experience in formulating their own opinions and assessing their results and can defend them in front of experts and laypeople. They also can independently acquire additional professional knowledge, skills, and competencies based on experience and their evaluation and independent study of theoretical and practical knowledge in the field. As a natural part of the study, graduates gain the ability to study and present their work results in English.

Professions

- System administrator
- Incident manager
- Technical support
- Software developer
- IT analyst

Hard skills

- OpenCV
- Algorithms and data structures
- Java
- OpenMP
- Backend / frontend development
- Information systém development
- C/C++
- Software design patterns
- Dlib
- Software development
- Software analysis
- Spring
- Django
- JavaScript (jQuery)
- Vector graphics
- x86 Assembler

- Unreal Engine
- .NET
- Linux
- Network technologies
- Modelling tools
- Computer network administration
- Blender
- Android
- Object-oriented software design
- Functional/data analysis of information systems
- Knowledge of web applications trends
- PostgreSQL
- JPA
- PL/SQL
- GIT
- CUDA
- MPI
- Maven
- IOS
- Software architecture
- Parallel data processing
- Haskell
- Fortran
- ICT security
- Development of web applications
- Data analysis
- Object-oriented programming
- JDBC, ADO.NET
- OpenGL
- PyTorch
- Process analysis
- RUP
- AJAX
- PHP
- Angular.js
- Oracle
- Application programming
- Object analysis
- Design and implementation of a data layer
- HTML, CSS
- Windows
- JUnit
- Python
- SQL
- JSF
- OS (Windows/Linux) administration
- UML
- Cordova
- Programming techniques (C, Java...)

- Microsoft SQL Server, T-SQL
- Parallel programming
- Software development

Study curriculum

- form Full-time (en)