

BRNO INTERNATIONAL SUMMER SCHOOL IN INFORMATION TECHNOLOGY

About BUT and FIT

The Faculty of Information Technology of Brno University of Technology (FIT BUT), the best-rated IT faculty in the Czech Republic, opens International Summer School in IT to take place at an interesting location in the heart of Europe. The International Summer School offers courses in selected IT areas for future technology leaders. The courses have been devised by experienced academics and offer both theoretical knowledge and practical seminars with experienced lecturers. A part of the lessons is project work in small teams. The courses also include visits to technology companies and guided tours to various points of interest in Central Europe.

Basic info

- **Price:** USD 1,660
- **Length:** 12 academic days
- **Term:** 11th to 26th of July, 2022
- **Language:** English
- **Location:** Brno, Czechia, Europe
- **Eligibility:** undergraduates in computer science or computer engineering 2-4 yr.
- **Graduation:** 5ECTS credits

The cost includes: lectures and materials, virtual company visits, social events and BUT Transcript. The tuition fee includes: lectures and materials, refreshments during breaks, 3 guided tours (Brno, Prague, Moravian Karst), two company excursions, and a party after the graduation ceremony.

PROGRAMME

The Brno Summer School in Information Technology offers courses in three important areas of information technology:

1. [Cyber Security and Forensics](#),
2. [Machine Learning](#) and
3. [Interactive Applications](#).

Students choose any of these courses. The courses cannot be combined.

CYBER SECURITY AND FORENSICS

The course introduces students to the basics of filesystems, operating systems, and their use in the area of digital forensics. They will learn essential cybersecurity principles and incident response techniques. Moreover, the attendees will try out various attacks, their detection, and how to create countermeasures.

Key outcomes

- Understanding fundamental concepts of cybersecurity and digital investigation
- Learning how to acquire a forensic image and examine filesystems, OS, and data
- Gaining skills for incident responses and forensics with real-world cybersecurity case studies
- Learning the essentials of cryptography, password protection, and cracking
- Getting hands-on experience to develop skills via open-source security tools
- Try out real cyber attacks in a lab environment and learn how to protect your system against such attacks

Lecturers

[Ondřej Ryšavý](#), [Radek Hranický](#), [Kamil Jeřábek](#) and [Ivan Homoliak](#)

MACHINE LEARNING

Students will get a broad perspective on the latest topics in machine learning and they will gain solid practical foundations to be able to solve advanced problems on their own. They will learn general data processing and machine learning methods, focusing on practical implementation in Python. The students will also learn general concepts of deep learning, including convolutional and recurrent networks. Lectures will also focus on specific state-of-the-art approaches in object and scene understanding from images, speech recognition and speaker identification, as well as language modelling and understanding

Key outcomes

- Gaining practical understanding of basic concepts of machine learning and data processing
- Being able to use convolutional and recurrent networks in practical applications
- Understanding basic concepts of computer vision
- Understanding the structure and parts of a speech recognition pipeline
- Understanding how words are represented in natural language processing methods
- Being able to extract semantic information, from text
- Experiencing how practical problems can be solved by machine learning in a team project

Lecturers

[Lukáš Burget](#), [Michal Hradis](#), [Lukáš Sekanina](#), [Martin Fajčík](#) and [Karel Veselý](#)

INTERACTIVE APPLICATIONS

The students will learn about the importance of user interfaces for efficient computer usage. They will be acquainted with basic principles and structure of applications and user interface development tools, master various aspects of the UI design process: from design thinking and user-centred design, to architecture design of web applications. Participants will practice their skills with modern development tools and technologies, design and develop a functional web application, and develop their presentation and teamwork skills.

Key outcomes

- Understanding of the bigger picture by studying the past, present, and future of user interfaces and human-machine interaction
- Understanding the design process focused on human-centred design
- Critically analysing contemporary websites, learning how they are built and deployed
- Understanding information system architecture
- Learning to design and develop front-end web applications based on classic and modern technologies

- Completing a team project that builds on multiple syllabus criteria

Lecturers

[Adam Herout](#), [Vítá Beran](#), [Radek Burget](#), [Libor Polčák](#), [Jarek Dytrych](#) and [Jan Pluskal](#)

A typical day

The timetable shown below offers an idea of a typical daily schedule, although this may vary depending on the events planned for the given day.

- **09:00-12:00** Morning academic session
- **12:00-13:00** Lunch
- **13:00-16:00** Afternoon academic session

Opening and Graduation ceremony

The opening ceremony takes place the very first day of the course. A common inaugural dinner will be held so that the students have an opportunity to get to know each other better.

The final evening of the programme celebrates the achievements of each participant in a graduation ceremony followed by a gala dinner.

Graduation

Students who complete at least 80% of the academic programme and finish course tasks or a final project of sufficient quality (50/100 at least) will receive a certificate of completion of the course worth 5 ECTS credits.

Excursions

The programme includes visits to two IT companies selected according to the main topics of the courses. The students will also be offered an excursion to the [IIC](#) (South Moravian Innovation Centre), which empowers entrepreneurs and businesses in all stages of development.

