

**“Politehnica” University of Timișoara**  
**Faculty of Automatic Control and Computing**

**Bachelor’s degree program: Computer and Software Engineering**

**Domain: Computers and Information Technology**

**General information**

Requirements: Baccalaureate (or equivalent) and admission contest based on a mathematics exam

Duration: 4 years (8 semesters); 240 ECTS credits

Teaching language: English (study program in Romanian also offered)

Form of studies: Full time

Professional title for the graduates: Bachelor Diploma and the title of Engineer with a Major in Computers

**Computer and Information Technology – general presentation**

Computers are indeed a field of the future, which offers us perhaps the most opportunities to transform imagined technologies into reality. Information technology has revolutionized the natural sciences, engineering and medicine; entire new areas, like artificial intelligence, or notions like virtual reality have appeared. Computers and IT are vitally needed in our everyday infrastructure: cars, banking systems and telecommunications. We depend upon these and they have to be designed to work without errors, efficiently and securely. Studying computer science means to understand the principles and functioning of modern computer and software systems, in order to take part in their design and implementation. Computer and software engineering offers an immense variety of challenges and application areas, from developing programs for everyday devices to complex software systems; from applications in biomedical engineering or robotics to inventing new technologies for computer architectures and software development, or understanding human cognition to build truly intelligent systems.

**Competences and knowledge acquired**

1. Understand fundamentals of exact sciences and engineering applied to computers and information technology
2. Master a large body of knowledge in computer science and information technology, become familiar with a wide range of application domains and consolidate at least one specialty
3. Identify, formulate and solve engineering problems using methods and instruments from computer science
4. Use, configure and administer computer systems and application software
5. Design, implement and test computer equipment and software systems, following a systematic process and using appropriate design tools
6. Experiment and evaluate solutions adequate with respect to economic and performance requirements
7. Recognize the economic, ethical, legal and social context of the computer and software engineering profession
8. Acquire a working style that integrates individual and team abilities, good communication, interdisciplinary and technical cooperation, and continuous professional development.

**Courses**

Computer programming	Software project management
Computer architecture and organization	Formal languages and compilers
Data structures and algorithms	Concurrent and event-based programming
Digital circuits and signals	Software verification and validation
Object-oriented programming	Web programming
Fundamentals of software engineering	Computer network programming
Operating systems	Device driver design
Computer networks	Computer security
Digital microsystem design	Wireless networks and communications
Software system design and architecture	Microprocessor systems
Embedded systems	Mobile systems and applications
Databases	Software quality and evolution
Fundamentals of artificial intelligence	Multimedia systems
Computer graphics and human-computer interaction	Assembly language programming
Digital telecommunication	Data mining



Photo: Cristian Tzecu

## Computer and Software Engineering at the “Politehnica” University of Timișoara

Computers have a long-running tradition at the Polytechnic in Timișoara. In 1961, the first electronic computer built in a Romanian university, MECIPT-1 was designed and implemented here, followed by personal computers which were series-produced, such as TiM-S Plus. In 1964, the first students specialized in Electronic Computers; today, there are 1100 students in Computing and Software Engineering, instructed by 50 highly-skilled faculty. Students have access to 25 laboratories with more than 750 computers and dedicated equipment, many outfitted in partnership with IT companies such as Alcatel, Continental, Hella, Lasting, Océ. First-hand industrial development experience is available through summer internships, software development groups and laboratory classes held by companies in the Liga AC Labs program of the student league. Students also work with faculty in research projects on mobile systems, robots and sensor networks, reconfigurable hardware, or integrated environments for software analysis. Each year, our students compete individually or in teams in the ACM programming contest or in competitions such as Microsoft exClTe and Imagine Cup where they have reached the world finals. The study program offers the flexibility of specializing by choosing the desired set of courses, and within the Erasmus program, our students can study 1-2 semesters abroad in partner universities. Student organizations such as AIESEC, BEST, Microsoft Student Partners group together students into active teams that get involved offering courses, internships, job fairs, for a richly rewarding student experience.

## Career opportunities

Practically all of our graduates find a job in very short time, due both to the large set of skills and knowledge acquired during studies, as well as the many opportunities offered by the highly developed IT industry in the area. The presence in Timișoara of large multinational companies has created here a strong pole for the automotive and telecommunication industries. There are also numerous medium-size and small IT companies, as well as a university business incubator which supports graduates and students alike to become local entrepreneurs and create startups pursuing their business ideas.

Our graduates have the needed knowledge and skillset required to fill specialty positions demanded by the job market, such as in network or system administration, development of mobile applications (Android/iOS), development of microcontroller systems, database design and administration, automated and robotic systems, antivirus software, network and software security, digital image and video processing, multimedia systems, distributed software systems, software or hardware project management as team or project leads.

The training imparted to our graduates is targeted both towards immediate practical application and to laying solid groundwork for continuing with specialization at Master and PhD level, be it in Romania or abroad.

## Contact

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Photo: Mihai Botescu