



PÁZMÁNY

Pázmány Péter Catholic University
Faculty of Information Technology and Bionics



ITK

Graduate Programs
Master's and PhD Possibilities

ABOUT US

Where Technology Meets Life

At Pázmány ITK, the Faculty of Information Technology and Bionics at Pázmány Péter Catholic University, technology meets life sciences. Our mission is to shape the engineers and scientists of tomorrow with solid knowledge and plenty of hands-on experience.

Small Faculty, Big Ideas

We are a small yet dynamic faculty where students, lecturers, and researchers know each other and work side by side. Rooted in Hungarian scientific tradition and open to the world, we combine intensive learning, cutting-edge research, and personal growth.

Here, studying is not just about gaining skills. It is an intellectual adventure: to explore, to innovate, and to uncover the secrets of nature.

Ready to bridge disciplines and help shape the future of technology and bionics? Join us!

RESEARCH

Research at the Cutting Edge

With over 30 research groups in biology, bionics, bioinformatics, electrical engineering, computer science, and machine vision, Pázmány ITK is a true hub of innovation.

Research Is Not Just for Professors

Students actively participate in our research, and their ideas have already led to seven successful startups.

Connected to the Best

Our closest partner is Semmelweis University, Hungary's leading medical university. Together we collaborate on master's programs and research projects, bringing engineering and medicine side by side. Our Budapest campus is also close to the Institute of Experimental Medicine, Nokia Skypark, the Corvin Technology and Science Park, and the Corvin Innovation Campus, opening doors to collaboration every day.

Curious about our research groups? Scan the QR code and explore.



ENGLISH-TAUGHT PROGRAMS AT A GLANCE

PhD Programs

Biology

Electrical
Engineering

Computer
Sciences

Master's Programs

Computer
Science
Engineering

Quantum
Engineering

Image
Processing and
Computer Vision

Info-Bionics
Engineering

Bioinformatics

Medical
Biotechnology

Artificial
Intelligence
Engineering





ARTIFICIAL INTELLIGENCE ENGINEERING MSC



RESPONSIBLE INTELLIGENCE BY DESIGN

Not Just Working AI – Understandable AI

AI is everywhere, but how many people really understand it? Here you'll learn how intelligent systems actually work and build your own, from smart algorithms to data-driven solutions. Because today it's not enough for AI simply to "work": you need to know how and why it makes decisions, and make sure those decisions are safe, fair, and trustworthy.

Industry-Ready, Open to Research

You'll master the entire AI lifecycle, from data to deployment, and learn to design human-centred systems that support people's decisions rather than replace them. Hands-on industrial skills and strong theoretical foundations prepare you for a career in industry or doctoral studies.

Key Focus Areas

- Machine learning and intelligent algorithms
- Development of data-driven systems
- Ethical and responsible artificial intelligence
- Industrial and research applications





BIOINFORMATICS MSC

INNOVATION BASED ON BIOLOGICAL DATA

Discover the Secrets of Life with Code

Every genome, protein, and cell generates vast amounts of data, and bioinformatics turns that data into discoveries. Working at the intersection of computer science and life sciences, you'll learn to process, analyse, and interpret biological and medical data with advanced computational methods. That know-how drives breakthroughs in personalized medicine, drug and vaccine development, and biomedical software.

Get Ahead in Your Career

Healthcare, biotechnology, and the pharmaceutical industry increasingly run on data analytics and artificial intelligence. Professionals who speak both biology and programming are in high demand. The Bioinformatics MSc gives you exactly this rare combination, preparing you to find your place in a fast-growing field full of new discoveries.

Key Focus Areas

- Sequence Analysis
- Structural Biology
- Bioinformatics Algorithms
- Biostatistics
- Molecular Diagnostic Data Processing Techniques
- Systems Biology Modelling Techniques
- Mathematical Description of Complex Systems
- Modelling of Neurobiological Processes

Specializations

- Biomolecular Data Interpretation
- Systems Biology



COMPUTER SCIENCE ENGINEERING MSC



INFORMATION TECHNOLOGY IN THE SERVICE OF HUMANITY

Where Nature Inspires Technology

Nature has spent millions of years perfecting solutions that engineers can only dream of. We bring these insights into information technology. Through close collaboration between life sciences and computer science, you'll help create innovative solutions that move technology forward and make a real difference in people's lives.

Cutting-Edge Tech, Career-Ready Skills

Learn to design, develop, and run complex software systems, intelligent applications, and industrial solutions. You'll dive deep into hardware, from kiloprocessors to reconfigurable architectures, and explore sensor technologies that open the door to info-bionics. Neuromorphic computing, natural language processing, machine learning, data science, and image analysis are all yours to explore, whether you're heading for industry or research.

Key Focus Areas

- Software Design and Mobile Applications
- Artificial Intelligence
- Non-Conventional Computing
- Image Processing, Computer Vision
- Prompt Engineering
- Database Management, Big Data
- Robotics, Control Systems
- Parallel Systems

Specializations

- High-Performance Computational Tools and Architecture
- Software Engineering
- Machine Learning for Data Science





IMAGE PROCESSING AND COMPUTER VISION EMJM (IPCVai)



FIND YOUR VISION WITH US!

Teach Machines to See

From self-driving cars and medical imaging to robotics and smart cities, computer vision powers many of today's most exciting innovations. The Artificial Intelligence for Image Processing and Computer Vision (IPCVai) Erasmus Mundus Joint Master's program takes you to the heart of it. It blends electrical engineering, applied mathematics, and computer science with a strong focus on AI-powered neural models.

Three Countries, Three Degrees, One Community

Over two years, you'll study in Budapest, Madrid, and Bordeaux as part of a close-knit international class, and graduate with three master's degrees. You'll spend your final semester interning in a research lab or with an industry partner, gaining real-world experience before you graduate. Whether you're aiming for a high-tech career or a PhD, you'll be ready to shape the future of visual AI.

Your Two-Year Journey

Semester 1 – Pázmány Péter Catholic University, Budapest, Hungary

Semester 2 – Universidad Autónoma de Madrid, Spain

Semester 3 – Université de Bordeaux, France

Semester 4 – Internship in an academic lab or in industry

Fully taught in English · 120 ECTS · Erasmus Mundus scholarships available



INFO-BIONICS ENGINEERING MSC



INNOVATION AT THE INTERFACE OF LIFE SCIENCES AND INFORMATICS

Where Biology Meets Engineering

Info-bionics brings together computer science, electronics, and biotechnology, giving rise to some of today's most exciting innovations, from implants to brain-computer interfaces. In collaboration with Semmelweis University, Budapest, you'll learn to model how living systems work and to design and operate the tools that measure and support them.

From the Lab to Real Life

Bionic eyeglasses, smart prostheses, neural electrodes, wheelchair navigation, minimally invasive surgical tools, multimodal medical imaging, sensor-driven robotics, and nanosensors are just some of the areas where you can put your knowledge to work. In each of them, you'll develop solutions that restore lost abilities and improve people's quality of life.

Key Focus Areas

- Medical Imaging
- Robotics, Prosthesis
- Brain-Computer Interface (BCI)
- Neural Electrodes
- Nanobiotechnology
- Bioinformatics

Specializations

- Bionic Interfaces
- Bio-Nano Sensors and Imaging Devices
- Neural Data Science





MEDICAL BIOTECHNOLOGY MSC

CELLULAR-LEVEL KNOWLEDGE, TUNED FOR HEALING

From Data to Health

Imagine designing the therapies, diagnostic tools, and vaccines of tomorrow. Developed in collaboration with Semmelweis University, Hungary's leading medical university, this program takes you to where medicine meets informatics. You'll learn to work with cells and biomolecules, apply and develop molecular diagnostic and bioinformatics methods, and model and simulate biological systems, turning complex biomedical data into real insights.

Shape the Future of Healthcare

From personalized medicine to drug and vaccine development, medical biotechnologists are at the heart of the next healthcare breakthroughs. Your future workplace could be a research lab, a biotech or diagnostics company, or an experimental medicine institute, where new treatments and investigative methods are born.

Key Focus Areas

- Bionanotechnology
- Biopharmacy-Pharmacokinetics
- Recombinant DNA Techniques
- Bioinformatics

Specializations

- Applied Bioinformatics
- Molecular Biotechnology



QUANTUM ENGINEERING MSC

**STAND AT THE FOREFRONT
OF THE TECHNOLOGICAL REVOLUTION!**



Quantum Technologies: The Driving Force of the Future

Quantum computers, sensors, and electronic devices are moving out of the lab and into everyday life, and the world will need engineers who truly understand them. From chip design and medical devices to the pharmaceutical and automotive industries and artificial intelligence, quantum know-how is set to become a key skill. Why not be among the first to master it?

Your Path, Your Focus

Built as an engineering program, it gives you a solid grounding in quantum physics and hands-on knowledge of quantum computing, communication, and sensing. It's ideal if you're aiming for a career in industrial research and development with stronger math, physics, and computing skills than most engineers, and physics graduates are welcome too. With project-based learning, you decide whether to focus on theory, software design, or experiments.

Key Focus Areas

- Quantum Algorithms
- Theory of Quantum Sensors
- Nanotechnology
- Integrated Photonic Systems
- Modelling
- Microelectronics and Semiconductors



ROSKA TAMÁS DOCTORAL SCHOOL

THE NEXT BREAKTHROUGH IS YET TO BE WRITTEN

Insights for Diverse Research Domains

The Roska Tamás Doctoral School of Sciences and Technology, accredited in 2001, offers a four-year, English-taught PhD program in three branches of science: computer science, electrical engineering, and biological sciences. Our doctoral students carry out their research in the Ányos Jedlik Laboratories, where 32 research groups work end-to-end, from theory and algorithms through hardware to laboratory, clinical, and industrial validation. Here, biology meets informatics, neuroscience meets engineering modeling, and nanotechnology meets biomedical applications.

Your Own Path to International Research

Guided by your academic advisor, you follow an individual study plan approved each semester by the Doctoral School Council. Two years of coursework and research conclude with a complex exam, followed by two years of focused work in the research and dissertation stage. To earn your degree, you publish at least two papers in internationally recognized, peer-reviewed journals, joining a faculty where more than half of all journal papers now appear in Q1 journals.

Key Focus Areas

- Neuroscience and Neuromorphic Systems
- Bioinformatics and Systems Biology
- Robotics and Intelligent Sensing
- Biomedical Imaging and Lab-on-a-Chip Systems
- Nano- and Quantum Technologies
- Human Language Technologies and Artificial Intelligence

Branches of Science

- Computer Science
- Electrical Engineering
- Biological Sciences



PATHWAYS TO STUDY AT PÁZMÁNY ITK

Two ways to join us as a Master's or PhD student – and a world of opportunities once you're here.



SELF-FUNDED STUDENTS

YOUR PATH, YOUR CHOICE

Wherever you come from, you are welcome. Enjoy high-quality, research-based education at a highly competitive tuition fee. As a self-funded student, you can choose from all of our MSc programs or pursue a PhD in our Doctoral School.

- Student visa and residence permit for your entire studies
- Private health insurance, funded by the university
- Flexible payment: from your second semester, pay your tuition fee in three instalments
- Dormitory accommodation available
- Small classes and lecturers who know you by name
- A smooth start with our Orientation Week and student mentors
- Erasmus+ grants open to you, too

Application: apply.ppke.hu

SCHOLARSHIPS

STUDY FOR FREE WITH A HUNGARIAN GOVERNMENT SCHOLARSHIP

Hungary's government scholarships can make your master's or doctoral degree fully funded, with support for your everyday life too.



Stipendium Hungaricum – for students from over 100 partner countries

Hungarian Diaspora Scholarship – for people of Hungarian descent around the world who wish to reconnect with their roots

What you get:

- Tuition-free studies
- Monthly stipend
- Dormitory place or housing allowance
- Free state-funded healthcare and complementary private health insurance
- Student visa and residence permit, with free administration

The allowances support your living costs but do not cover them in full.

Extra for Diaspora scholars: one-time travel allowance if you relocate from more than 8,000 km away.

stipendiumhungaricum.hu · diasporascholarship.hu/en



ONCE YOU ARE HERE: ERASMUS+

MAKE EUROPE YOUR CLASSROOM

Study or intern abroad for up to 12 months at one of our prestigious partner universities across Europe as a master's or PhD student. It's a chance to gain new perspectives, build an international network, and add real value to your CV.



- Full recognition of your courses abroad, so you stay on track
- Mobility grant towards your travel and living costs
- No tuition fee at the host university: self-funded students keep paying only at Pázmány ITK
- Short-term options: join Blended Intensive Programmes (BIPs) with students from across Europe
- PhD students can also go on short-term doctoral mobility to boost their research
- Already graduating? You can still go abroad on an Erasmus+ traineeship within a year of completing your degree.



HUNGARY - A UNIQUE DESTINATION FOR LEARNING AND LIVING

Studying in Hungary means more than earning a degree. It means years of discovery in the heart of Europe, where a thousand years of history meet a buzzing, modern lifestyle. Living costs are affordable, the international community is lively and welcoming, and you'll be in one of the safest countries in Europe. Get ready for a city that never gets boring, landscapes worth exploring, and an experience you'll remember for life.

HUNGARY AT THE HEART OF EUROPE

Few places make it this easy to see Europe. Budapest's international airport is a major regional hub, and an excellent rail network connects you to the neighbouring countries. Vienna and Prague are just a short train ride away, while Rome or the stunning Adriatic coast make perfect weekend escapes. Hungary itself is full of surprises: charming historic towns like Eger, Pécs, and Szentendre, the scenic Danube Bend, Lake Balaton's summer vibes, and wine regions such as Tokaj, all just a few hours from Budapest. Study here, and both Hungary's hidden gems and Europe's rich diversity are right on your doorstep.

LIFE IN BUDAPEST

Budapest, Hungary's capital, has a way of winning people over. The Danube divides the city into hilly, green Buda and the vibrant, cultural heart of Pest, and every corner has a story to tell. Grand architecture and cosy side streets, thermal baths and rooftop bars, world-class festivals and an exciting food scene: there's always something new to discover. With a large international community and endless opportunities for students, Budapest is rightly counted among the best student cities in the world, a place where tradition meets innovation every day.



STUDENT LIFE AND AFFORDABILITY

Every year, thousands of international students choose Hungary, and it's easy to see why. Thanks to student-friendly prices, you can enjoy dining out, travelling, and going to events without breaking the bank. Your Hungarian student card makes it even better, with generous discounts on public transport, museums, and more. And if you live in one of our university dormitories, your housing costs stay remarkably low. From world-famous festivals to vibrant nightlife and a packed cultural calendar, you'll always find something that matches your interests. At Pázmány ITK, your social life can be as rich as your studies.

SAFETY AND LANGUAGE

Hungary ranks among the safest countries in Europe, and Budapest is one of the safest capital cities you'll find, without losing any of its big-city buzz. Many of our students, women included, tell us they feel at ease walking home alone in the evening, which is not something everyone can say about their hometown. That peace of mind lets you focus on your studies and enjoy your time here.

Hungarian ("magyar") is the official language, but English is widely spoken, especially by young people. To dive deeper into the local culture, Pázmány ITK offers two semesters of Hungarian language classes.

CLIMATE AND SEASONS

Hungary's continental climate gives you four distinct seasons, each with its own charm. Summers are warm and sunny, perfect for open-air festivals and a swim in Lake Balaton, while winters can bring snowy landscapes and cosy Christmas markets. Temperatures range from around -7°C in January to 35°C in July and August, so pack for every season and enjoy them all.



YOUR PATH TO ADMISSION



Master's Programs: What You Need

- A bachelor's degree (180 ECTS) completed before your master's program starts
- English at B2 level (CEFR), proven by a language certificate

No language certificate needed if English is your native language, if your bachelor's degree was taught fully in English (with proof of medium of instruction), or if you earned it in a country where English is an official language.

Scan the QR code to see which BSc degrees are typically accepted for each program.

How It Works for MSc Programs

1. Online written test – multiple-choice questions on program-specific subjects, taken on the University's Moodle platform within a 2–3-day window
2. Video and/or live online interview – shortlisted applicants are invited to an interview about their background, motivation, career plans, and exam topics

Applying to IPCVai?

This Erasmus Mundus Joint Master's program has its own procedure, run jointly by the three partner universities: a preselection based on your academic record, motivation, and recommendations, followed by an interview. Places are limited and competition is strong, so make your application stand out.

Aiming for a PhD?

Applicants to the Roska Tamás Doctoral School of Sciences and Technology need a relevant master's degree, a chosen research topic from our published list, and a supervisor who supports their application. The process ends with an interview where you present your motivation and first research results.

Finances

Tuition fees vary by program and differ for EU and non-EU citizens. Scan the QR code for current fees and application costs.



STARTING YOUR JOURNEY AT PÁZMÁNY ITK

Foundation Semester: Your Launchpad

Most international master's students (except IPCVai) begin with a Foundation Semester in the fall. It refreshes and strengthens your bachelor-level knowledge and helps you settle into academic life in Budapest, so you can start your MSc in February fully prepared. Successful completion is required to continue, which is why our master's programs for international students usually last 1+4 semesters. If you earned your bachelor's degree in Hungary, you may be exempt, depending on your previous studies.

Your Academic Year

- Fall semester: classes from September to early December, exams until late January
- Spring semester: classes from February to mid-May, exams until late June
- Summer break: July and August
- Seasonal breaks: in late October, around Christmas, and near Easter

Plenty of time to study hard and recharge.

Find Your Home in Budapest

Dormitories are a popular, affordable option in Hungary. Pázmány University's dormitories welcome international students in two buildings, with a range of room types to choose from. Places are limited, so apply early.

You can also rent a flat, and sharing it with fellow students keeps costs down. Explore many more options on our website for every budget and lifestyle.



SUPPORT, CONNECTION, AND COMMUNITY

As a Catholic university, we are committed to human values, a strong community, personal attention, and improving people's quality of life through our work. These values shape both our teaching and the inclusive environment we create for every student.

MENTOR SERVICE

You'll be paired with a mentor, a fellow student of the Faculty, who helps you before and after you arrive: from travel plans and paperwork to studies and free time. Cultural and sports events make it easy to find your crowd.

ORIENTATION WEEK

A mandatory, activity-packed week to kick off your university life: academic advising, enrollment help, campus tours, and social events where you'll meet fellow students, lecturers, and staff. Plan your arrival so you don't miss anything.

FAITH LIFE

Catholic students will find a familiar, supportive space to practice their faith, with weekly Holy Mass in the faculty chapel and a chaplain available for spiritual conversations and confession, also in English.

Students of all faiths, or none, are warmly welcome. We ask for respect for the Catholic traditions on campus, and we equally respect everyone's personal beliefs. That mutual respect is what helps us live, learn, and grow together.



WHY CHOOSE PÁZMÁNY ITK?

INNOVATE, CONNECT, AND EXCEL IN A GLOBAL ACADEMIC ENVIRONMENT

RESEARCH-ORIENTED EXCELLENCE

Gain experience in our state-of-the-art laboratories. Work alongside top experts, contribute to groundbreaking projects, and connect with innovative companies shaping the future of IT and life sciences.

EARN A EUROPEAN DEGREE

Get a high-quality, globally recognized degree that meets European standards, combining academic excellence with affordability.

SUPPORTIVE AND CLOSE-KNIT COMMUNITY

Enjoy a family-like atmosphere, where a strong student community and dedicated student services support you every step of the way.

A LIVEABLE AND SAFE COUNTRY

Study in one of Europe's safest and most livable countries, with affordable living costs, a vibrant cultural scene, and a high quality of life.

INTERNATIONAL AND MULTICULTURAL ENVIRONMENT

Join students from all over the world. Leave with not only a degree, but a global perspective and friendships that last a lifetime.



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