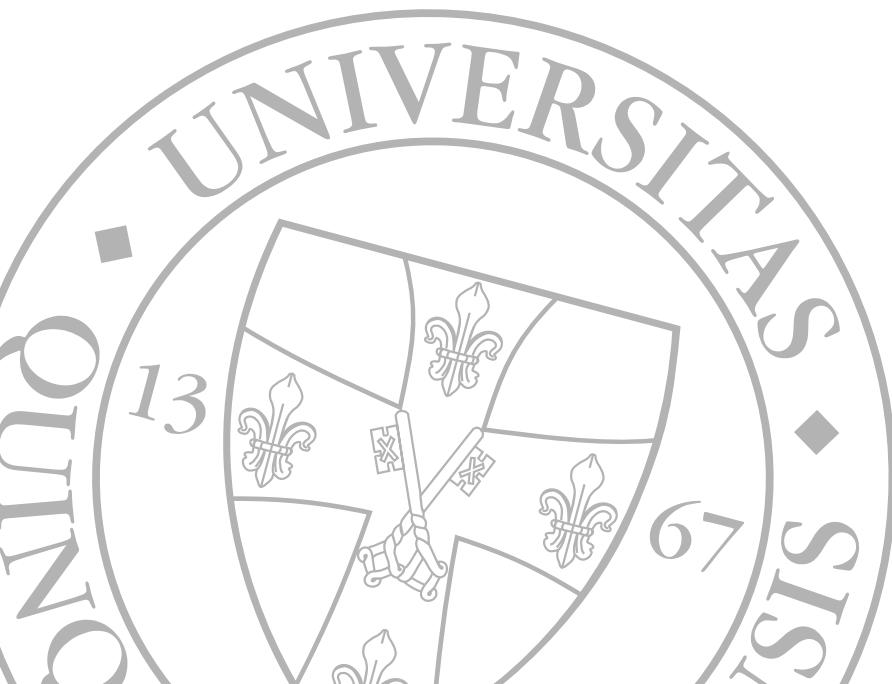


University of Pécs
**Faculty of Engineering and
Information Technology**





Dean's Greeting

Dear Reader,

You are holding in your hand a special and long-awaited publication which aims to present how a former technical and architectural college has been transformed into a university faculty, complete with a doctoral school and English language training, and how information technology engineering – especially its applied scientific branches – have been given more and more emphasis in our training, research and development work.

We will show you how the positive and rapid responses of a 'small' regional institution can be applied to today's challenges, while still covering all the aspects of an engineering education of a technical university. In certain fields of study this engineering education is also complemented by an artist training programme.

We will also touch upon the achievements of our students and lecturers, several of whom are recognised at an international level. While presenting our training programmes, we will highlight the research topics and laboratory background which, in addition to being important educational tools, can cater to our commercial partners, enabling them access to our advanced systems and instruments.

We consider it essential to prepare a highly trained workforce in the development of infrastructure and energetics, in production, in architectural design and investments, and also in the IT sector. Preparation for decision-making and implementation requires up-to-date, advanced level, specialised professional knowledge and cutting edge management practices. The training programme must provide the opportunity to familiarise students with this knowledge.

Our century has witnessed an accelerated paradigm shift in technology, industrial processes have been globalised and, in addition to specialisation in a professional field of study, the knowledge of cross-disciplinary sciences are becoming increasingly important.

Our objective is to provide practice oriented, flexible and high-quality training programmes which meet the fast changing demands of the 21st century, to award internationally recognised, prestigious degrees and, by sharing our pool of knowledge, to teach our students to think as responsible and creative individuals.

Join us for this adventure and see for yourself that, not only do we present different colours of engineering, but we are also one step ahead seeking answers to tomorrow's challenges.



Dr. Bálint BACHMANN Dean

Colours of Engineering – One step ahead



Pollack Mihály Technical College was founded in 1970. Its legal predecessors were the Polytechnic of Building Services of Budapest and the Chemical Industrial Engineering Polytechnic of Pécs. A Building Installations Department and Civil Engineering Department were created in 1971. From 1st July, 1995 the college was integrated into Janus Pannonius University, which changed its name to the University of Pécs in 2000. It has been functioning as a faculty since 2004; from 2006 it was the Pollack Mihály Faculty of Engineering, from 2011 as the Pollack Mihály Faculty of Engineering and Information Technology – showing the increased emphasis on information technology in both education and research. In 2015 the name of our institution was simplified to the Faculty of Engineering and Information Technology, University of Pécs.

Today with its 3,000 students, its several decades of experience, its renovated and extended campus, the Faculty of Engineering and Information Technology is one the most colourful institutions of Hungary's tertiary technical education and one of the prominent centres of the country's engineering life.

The 8 basic training programmes cover technical, artistic and information technology related fields of study in the following branches: architecture, civil engineering, environmental engineering, electrical engineering, information technology and architectural design.

Our higher level vocational training for producing television programmes is also popular.

Our students can choose from **10 Master Degree programmes** mainly in the fields of architecture, architectural design, civil engineering and information technology.

Since September 2014 students could opt for **undivided training in architecture, Architect Designer DLA and Architectural Engineering PhD**, and from September 2015, **IT Engineering BSc** and **MSc programmes**, and a Civil Engineering BSc, Structural Engineering MSc programme will be available as **English language programmes**.

In September 2015 practice-oriented **dual training programmes** will be launched with participation from industries and companies within the BSc programmes of Architectural Engineering, Civil Engineering, Mechanical Engineering, Electrical Engineering, Information Technology Engineering and Environmental Engineering.

For those graduates who already have a degree we offer 13 different postgraduate specialist training courses.

We have 135 lecturers, 82 of them have a PhD or DLA degree and 29% have reached the qualification of habilitation. Several of our lecturers are Doctors of the Hungarian Academy, several lecturers have artistic awards, and three are members of the Hungarian Academy of Art, one is a member of the Hungarian Academy of Sciences,

13 lecturers are holders of a candidate degree and we have three full-time researchers. More than half of our lecturing staff is under the age of 50.

Infrastructure and Computer Science Background

The refurbishment of the 20,000 m² educational and research building complex was completed in 2007-2008 with an investment of 3.5 billion Hungarian forints.

As part of the campus, the dormitory, which can accommodate 800 students, was renewed and double rooms with bathrooms were created.

During the comprehensive refurbishment of the faculty buildings, classrooms were equipped with air conditioning and modern multimedia equipment. State-of-the-art instruments and equipment were installed in the labs adjacent to the main educational building.

Our Degree Programmes

Architecture and Design

Undergraduate Programmes:

- » Architectural Engineer BSc
- » Architectural Designer BA
- » Architecture – undivided training (also in English)

Postgraduate Programmes:

- » Architecture in Construction Design MSc
- » Architectural Engineer MSc
- » Interior and Environmental Designer MA
- » Architectural Designer MA
- » Urban Systems Engineer MSc

Postgraduate specialist training courses:

- » Visual mediator, designer for schools

Doctoral School (PhD, DLA)

Breuer Marcell Doctoral School
Doctor of Philosophy (PhD) in Architectural Engineering and Doctor of Liberal Arts (DLA) in Architecture programmes (also in English)



Engineering

(Mechanical, Industrial Design, Civil and Environmental, Electrical)

Undergraduate Programmes:

- » Civil Engineering BSc (also in English)
specialist areas:
 - » Structural Engineer
 - » Infrastructure Engineer
- » Mechanical Engineering BSc
specialist areas:
 - » Mechanical Maintenance Engineer
 - » Building Services Engineer
- » Industrial Design Engineer BSc
- » Environmental Engineer BSc
specialist areas:
 - » Protection of the Urban Environment (industrial and communal)
 - » Environmental Technology
- » Electrical Engineering BSc
specialist areas:
 - » Electrification and Automation of Facilities
 - » Embedded Microcomputer Systems

Postgraduate Programmes:

- » Structural Engineering MSc (also in English)

Postgraduate specialist training courses:

- » Waste Management Specialist Engineer
- » Waste Management Technical Specialist
- » Environmental Management Consultant
- » Energy Efficiency in Buildings Specialist Engineer
- » Quality Control Systems Manager
- » Nuclear Environmental Specialist
- » Nuclear Environmental Specialist Engineer
- » Urban Management Specialist Engineer
- » Urban Management Specialist
- » Noise and Vibration Specialist Engineer
- » Noise and Vibration Specialist

From September 2015

- » Specialist Engineer in Historical Building Diagnostics and Rehabilitation
- » Technologist of Historical Building Diagnostics and Rehabilitation

Information Technology

Undergraduate Programmes:

- » Computer Science Engineering BSc (also in English)
specialist areas
 - » Systems Engineer
 - » Information Technology of Autonomous Systems

Postgraduate Programmes:

- » Computer Science Engineering MSc (also in English)
specialist areas:
 - » Intelligent Systems – Robot Programming
 - » Multiprocessor Computer Systems

Postgraduate specialist training courses:

- » Television Programme Producer

Centre for Dual Training and Further Training for Engineers

- » Establishing the framework of dual training, providing coordination services for training
- » Preparing chief technical officers and technical supervisors for the exam
- » Training related to the introduction of the electronic construction records system
- » Preparation for the certifying exam in energy efficiency in buildings

Training courses

- » Cisco Network Academy
- » EIB course and exam
- » Festo course (mechatronics)
- » SAP course
- » JAVA programming courses

In addition to the above listed programmes we also provide tailor made **short courses or in-company courses**. In 2015 we are planning to launch complementary training courses for our graduate students for credit points to enable them to acquire designer's or consultant's certificates.

Language exams – Lectorate of Foreign Languages for Technical Purposes

- » Accredited general language exams and preparation courses (Cambridge, ÖSD, BME, TELC)
- » Accredited language exams for specific purposes and preparation courses (Lexinfo, Zöldút)
- » Institutional internal exams and preparation courses



Our aim is to train architects who are capable of accomplishing all the architectural and construction works of urban development. Specifically, they are able to cope with the architectural and structural design of buildings and building complexes, to plan, organise, inspect and supervise construction, to carry out building maintenance and renovation projects, to complete heritage protection tasks, to undertake theoretical, scientific and educational work and to supervise building administration and building authority tasks.

The professional character and style of our architect and undivided architecture training is determined by the renowned architects who teach at the faculty. Our approach is influenced by the internationally acknowledged Bauhaus architects from Pécs, such as Marcell Breuer, Alfréd Forbát and Farkas Molnár. The style of the architect training is also influenced by our openness to contemporary architecture, progressivity and following international trends. A new focus is on 'Energy Design', which can be a specialisation, a research area and project based work. These components are important so that students can incorporate an ecological viewpoint and methodology into their work.

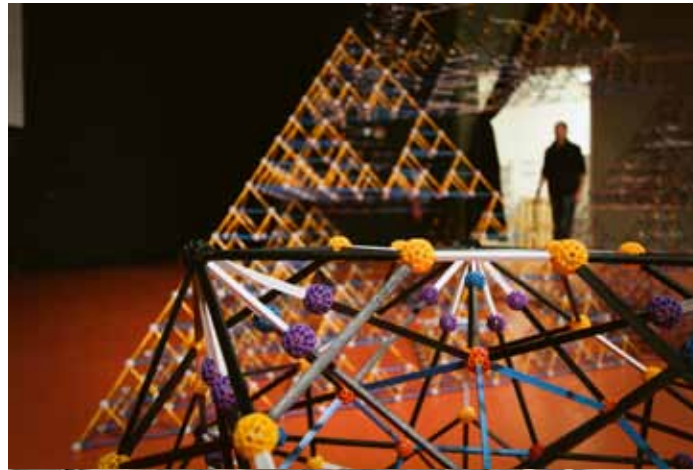
The preferred way of teaching, the so-called studio-style training means that a direct master-student relationship is created, students work together with their teachers on the projects with the most talented continuing their studies at the Breuer Marcell Doctoral School.

Training programmes

- » Architectural Engineer BSc
- » Architecture – undivided training

Continuing studies at MSc

- » Architecture in Construction Design
- » Architectural Engineering
- » Urban Systems Engineer



This programme in architecture is unique in Pécs because it offers architectural engineering and architectural design training parallel to each other. Because architecture is an amalgamation of art and engineering science, the aim of the training is to deliver both artistic skills and engineering knowledge which reflect this relationship. At the core of the teaching and learning process is the personal relationship established between the student and lecturer.

The architectural designer training starts with the Bachelor (BA) degree course, continues through the Master course (MA) to the DLA School.

Training programmes

- » Architectural Design BA

Continuing studies at MA

- » Interior and Environmental Designer
- » Architectural Designer

Architectural designers are trained to carry out complex tasks involving the three core components of architecture, interior design and furniture design within one project. Their designs can be based on the master plan, using their building design skills and continue to the finer details of interior design.

Continuous renovation and changes to the interiors and form of the world's existing buildings continues to create a growing demand for interior designers.



Breuer Marcell Doctoral School

The Department of Architecture Design has successfully run the DLA (Doctor of Liberal Arts) programme since 2003, and this has been complemented by a PhD programme in Architectural Engineering.

The Doctoral School's programme is based on the undivided Architect MSc training, the separate Architect MSc training, the separate Architecture Designer and the undivided Architecture Designer training. Its mission is to provide the appropriate training for the best graduated architects, structural engineers and those holding an art or scientific degree related to architecture, in accordance with the talent promotion concept of the Bologna training scheme. The Doctoral School focuses on one of the most important issues that Hungary and the Pécs region faces: the protection of national heritage which – when executed with the use of modern equipment and technologies – naturally embraces collaboration with wider scientific fields (civil engineering, supporting structures, geology, and information technology).

With its excellent teaching staff and technical background, the doctoral school provides students with the opportunity to participate in creative studio work and to effectively carry out their doctoral work. This goal is further aided with the involvement of professionals in a variety of fields and strong international relationships. Besides the integrated heritage protection programme, the local atmosphere of Pécs helps young architects and researchers experiment with new, 21st century solutions in heritage protection.

An outstanding achievement of the Breuer Marcell Doctoral School is that the curatorship of the Hungarian pavilion at the Venice Biennale in 2012 was awarded to Dr Bálint Bachmann and Dr Balázs Markó. This meant that the work of our architecture students, which was carefully selected from a competition, was displayed alongside the work of world famous architects.

Also, the winning design for the Hungarian pavilion at the Milan Expo 2015, 'The Mill', was designed by two of our architecture lecturers, Dr Tamás Gettó and Dr Ákos Hutter.



During their academic studies students are provided with a sound base for practising the civil engineering profession within a modern and friendly environment. Testing and diagnostics laboratory and project work complement the practice-oriented training of the school, and students have the opportunity to take an active part in the department's research team. The standard of education is further enhanced by access to the following software packages – FEM-Design, Axis, Tekla Structures and Ansys, and the graphical software AutoCAD, ArchiCAD and WasyGeo, ArcView 3.2, ESRI Hungary ArcGIS 3D.

Continual collaboration with industrial partners and the recently launched dual training programme help students acquire up-to-date and marketable knowledge.

As a result of our excellent cooperation with foreign institutions students may also have the opportunity to complete part of their studies abroad.

Training programmes

- » Civil Engineering BSc

Optional specialisations (specialist areas):

Structural Engineering specialisation:

- » Building Construction
- » Building Management

Infrastructure-Civil Engineering specialisation:

- » Traffic Installations
- » Hydraulic Engineering
- » Urban Studies

Continuation of studies at MSc level

- » Urban Engineering



Laboratories and Instruments

Geotechnical Lab

During the training programme students will learn how to classify different soils and determine their condition and characteristics (e.g. grain size distribution, Casagrande testing, current, odometer and shear box testing).

Geodesic Lab

Introduces students to the use of both classical geodesic instruments (theodolites, levels, tachymeters) and state-of-the-art equipment (measuring stations, optical distance measuring instruments, laser theodolites, GPS).

Structural Diagnostic Labs

With the support of funding from international projects over the last few years, the department has been able to significantly expand the laboratories and instruments available for both education and research. Three of our labs – the *Mobile Structures Diagnostics Lab*, the *Building Materials Testing Lab* and the *Supporting Structures Testing Lab* – are equipped with specialised instruments such as the VEGA 3 SBH electron microscope, TESTO 885 high sensitivity infrared camera, INSTRON 5595 universal testing equipment, IDS dual frequency geo-radar, in addition to other frequently used structural testing instruments. This means that we are able to carry out specialised testing tasks and research to a high level.

Our **Structural Diagnostics and Analysis Research Team** was started in 2010 with the participation of members of the Department of Structural Engineering and Supporting Structures and the Department of Materials Science, Geotechnology and Infrastructure Engineering making use of the laboratory equipment.

The aim of the research team was to examine damage processes, analyse the efficiency of different diagnostic methods in discovering damage, creating a methodology to assess the condition and lifespan of structures, and using numeric modelling to assess the reliability and estimated lifespan of structures. The inspection and assessment of historical buildings plays a central role in this research work, which is also a prominent research topic at the faculty's doctoral school.

Over the last few years our research team has participated in several international and Hungarian research projects such as the international project dealing with the 'Condition inspection and preservation of stone and masonry arch bridges' (project of UIC International Union of Railways with the participation of 14 countries) and 'Historical Structures' (Hungary-Croatia IPA Cross-border Co-operation Programme, 2011-2013). In both of these international projects our research team took the role of consortium leader.

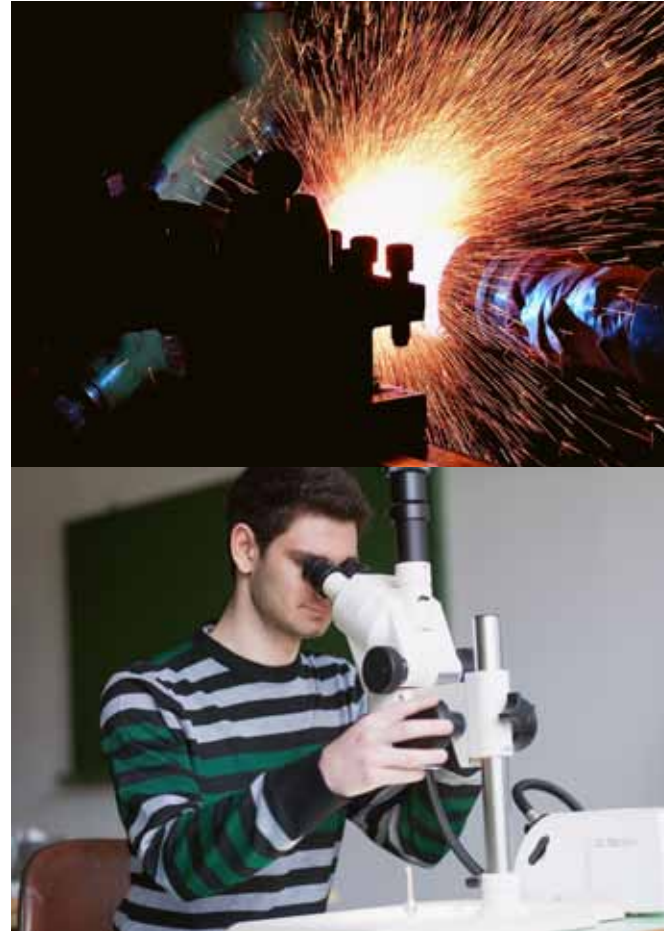
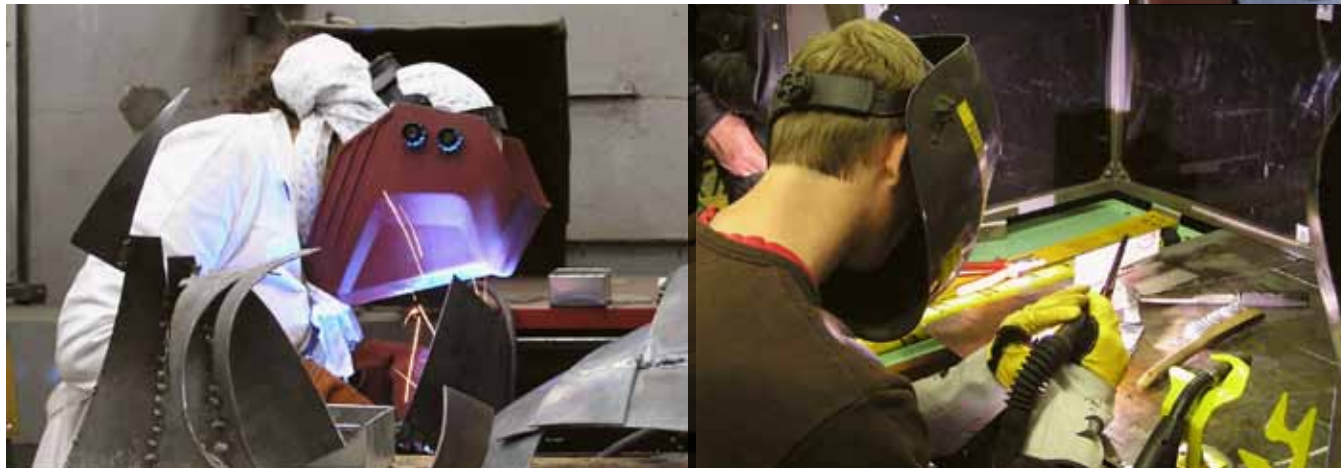
Industrial Design Engineer



Our Industrial Design Engineering programme couples Mechanical Engineering and the Department of Machinery Structures with active participation of the Department of Interior and Environmental Design. This is the area where classical engineering knowledge merges with designer skills. Industrial designers graduating from this course are capable of designing, producing and marketing industrial products.

Training programme

- » Industrial Design Engineer BSc



Mechanical Engineer



Students studying mechanical engineering in Pécs can choose from two different specialist areas. Graduate mechanical maintenance engineers can find employment in the different phases of manufacturing, they study the craft of designing and operating various machine components.

Building services engineering students are taught everything that is necessary for the sustainable, comfortable and energy efficient operation of building installations.

Engineers graduating from the University of Pécs are sought after both in Hungary and abroad. They share a love and respect of their profession, and are precise and independent problem solvers. Students typically take part in the lecturers' research projects and collaboration between different fields of engineering frequently occur, for example:

- » domestic gas-powered generator (for producing heat and electricity)
- » modernisation of maintenance strategies
- » design of a pellet press
- » measurement and certification of the natural ventilation and air density of buildings
- » vacuum rainwater system, building services of green roofs
- » comfort measurement and certification
- » building services pipe systems, measurement of fittings and energy converters

Training programmes

- » Mechanical Engineering BSc

Specialist areas:

- » Mechanical Maintenance Engineer
- » Building Services Engineer

Mechanical Maintenance Engineer Training

Topics of research and development activities

- » Dynamic inspection of a hydraulic bell tower
- » Corrosion protection of iron girders exposed to soil
- » On-site adaptation of a pouring crane for the Faculty of Music and Fine Arts at PTE
- » Design and fabrication of an automatic welding machine
- » Development of geological simulation mapping board for the faculty of science
- » Passive house/building density testing
- » Radon mitigation in buildings
- » Comparative analysis of maintenance strategies
- » Potential efficiency enhancement of gas-fired combined electricity and heat generating units
- » Mechanical development of energy utilisation from organic agricultural waste

Workshops and laboratories

- » Cutting workshop: traditional, CNC, RPC laser
- » Arch welding workshop
- » Oxygen acetylene welding workshop, 3D welding simulator
- » Forging workshop
- » Fitting workshop
- » Modelling workshop
- » Heat treatment workshop
- » Technology lab, materials testing
- » Mechanics, diagnostics lab: vibration analysis, endoscopy, laser shaft alignment, SPM bearing checking



Building Services Engineering Training

Topics of research and development activities

- » Water utilisation, water conservation, greywater, rainwater, health issues
- » Heat comfort
- » Natural ventilation and air density of buildings
- » Design, operation and energetics of HVAC systems
- » Design, operation and energetics of heating systems
- » Renewable energy
- » Computer aided building services design
- » Building energetics
- » Participation in the planning and development of regulations on building energetics
- » Energy auditing, monitoring and consultation

Workshops and laboratory background

- » Comfort measuring chamber
- » HVAC systems and elements, clear space chamber
- » Heat recovery, air-air and soil-air systems
- » Heat pump, soil probe, soil collector
- » Gas technology
- » Inspection of gas boilers
- » Pellet boilers
- » Testing of regulatory systems
- » Testing of pumps
- » Testing of pipes
- » Solar panel systems and equipment
- » Acoustics and reverberation chamber with related measurement instruments

Environmental Engineer



The environmental engineer training in Pécs is one of the longest-standing programmes in Hungary. One of the strongest points of our training is that the whole spectrum of environmental protection receives equal emphasis, which means that students are introduced to a colourful, comprehensive and multidisciplinary education. Graduates of the programme, who have learnt the lifecycle concept and systems approach, can come up with synergistic connections between specific branches of industry and existing technologies, enabling them to best manage development projects so that the condition of the environment is not degraded and companies can still remain financially competitive. The training, which focuses on active and preventive environmental protection, produces graduates capable of working in industry, agriculture, the service sector or in local authorities.

Training programme

» Environmental Engineering BSc

Specialist areas:

- » Industrial and communal (urban environmental protection) areas: focus is on the environmental protection of settlements developed from the core teaching material.
- » Environmental technology: technology applied in the field of environmental protection completes the knowledge learnt in the core material.



Students are required to do 8-weeks practical work to gain professional experience and collaboration between the Department of Environmental Engineering and local businesses give students the opportunity to complete internships. In addition to these options, students can also choose the practice-oriented dual training programme offered from September 2015.

Graduates can expand their knowledge and specialise further by attending postgraduate specialist training courses which have prominent guest speakers who speak about the environmental industry, complex environmental technologies and R&D&I. Other subjects which may be specialised in include waste management, noise and vibration protection, nuclear environmental protection, urban management and environment management.

The training programme is supported by a modern laboratory facility that allows numerous measurements, experiments and research to be carried out in the field of environmental protection. This facility is available for students, lecturers and external partners.

The **environmental technology and fluid mechanics laboratory** is equipped with a vacuum, compressed air and technical water network. It is suitable for producing the pressure levels and typical temperatures characteristics required in education and research areas, and semi-professional experiments can be carried out. The laboratory is also appropriate for measuring the effects of HVAC, for measuring air purity, for carrying out small sample experiments with several water samples to work out the optimal way to obtain drinking water, for aerobic and anaerobic biodegradation testing of waste water, for sedimentation and flocculation testing, for sludge separation testing, for air diffusion testing, for the testing of conservative tracers of reactors, for leakage hydraulics testing, and for filtering experiments on depth filters, etc.

In the **environmental protection assessment laboratory** a variety of testing, including water analytic testing, soil testing and waste testing can be carried out on samples of polluted industrial soils, sediment, water, wastewater, sewage sludge, ash, biological samples or unidentified materials. We can also conduct tests on biogas and landfill gas, the distribution of grains in dust and soils, the thermal transformation of solid materials and examine the physical and chemical properties of fuels. Our acoustics laboratory enables us to carry out a variety of noise and vibration measurements including interior acoustics, acoustic elements, noise sources, which enables us, through detailed analysis, to prepare a noise map.

Several research groups operate in this field, such as one group which is doing research on 'Engineering means and methods of modern environmental development'. Another initiative is the 'Smart City Technologies' research group which is conducting interdisciplinary research in relation to waste management, resource utilisation, building energetics, water management and urban management and is studying different ways that urban living can be sustainable even when threatened with a variety of environmental impacts. Another research team is working on the following topic, 'Interdisciplinary examination of the technical and ecological values of green roofs'.



Computer Science Engineer



Computer Science Engineering BSc training is divided into two specialist areas.

Information Technology of Autonomous Systems teaches students about the design of automated systems, robots and industrial controls.

Major subjects include programmable logic controls, image and sound processing and product modelling.

Systems Engineering students learn about network administration, the setting up and operation of client-server architecture.

Major subjects include the operation of clients, networks and system management and internet technology.

The biggest achievements in this field have been those innovative projects which were collaborations between different engineering fields. These projects were the result of joint work between teaching staff and students and include, the Orca vehicle which successfully participated in the Shell Eco-Marathon, and surveying projects carried out by drones that map ragweed in fields.

Due to the dynamic nature of the IT market and continuous new challenges, new developments are continuously appearing in the curriculum. These include image processing, 3D simulation, automation and autonomous systems design. For systems engineering specialists, emphasis is given to information security (both defensive and ethical hacking), the design and setting up of data centres and quantum informatics.

Continuation of studies at MSc

Specialist areas

- » Intelligent Systems
- » Multiprocessor Computer Systems



Our training is supported by our corporate partners which include IBM, Balabit, Omikron, Oracle which ensures that students are kept up to date with new developments in this field.

At the heart of our training programme are multiprocessor systems.

In 2014, in recognition of our training and research work on multiprocessor systems, we were the first Hungarian institution to be awarded the title of **CUDA Training Centre** by NVIDIA. NVIDIA is the leading corporation known primarily for its state-of-the-art graphics processing units. This innovation has turned computer graphics into a continuously expanding industry, which is utilised in video games, film production, product design, medical diagnostics and scientific research.



IT Labs and Instruments

The faculty has eight central and four department run computer labs each containing 25+1 computers. The hardware is upgraded on average every 2nd year, with an investment of several million forints.

In 2010 a special network lab was created with 23 PCs which were set up so that various settings, network configurations and topologies could be modified, enabling students to experiment with a variety of scenarios. This lab also operates as an 'Industrial Ethernet Competence Centre', which was created with the help of the equipment donated by the company Phoenix Contact.

In 2010 a new lab was created in cooperation with National Instruments Hungary, a company which deals with measuring technology, controls and automation. In the laboratory there are four NI-ELVIS II. (Educational Laboratory Virtual Instrumentation Suites) – on which a range of measurements, data collection, signal generation and signal analysis can be carried out.

We also have other labs for learning mechatronics, building information technology and programmable logic controls.

Supercomputer at the University of Pécs

SGI Altix UV 1000, 192 six-core XEON CPU (2.6 GHz), 1152 cores, 6 TB memory, Suse Linux 10 Tflops performance.

Accessible to students and also used in the MSc training.



Television Programme Producer Postgraduate Specialist Training

We aim to train television and media professionals who have extensive technical expertise and high level communication and social skills.

Our students learn how to use a variety of cameras and editing tools, making it possible for them to produce material for both the television and online. They are taught how to work individually and as part of a crew, and in a variety of settings such as in a studio or outdoors. By the end of the course students can put together a production plan, write a script and edit news.

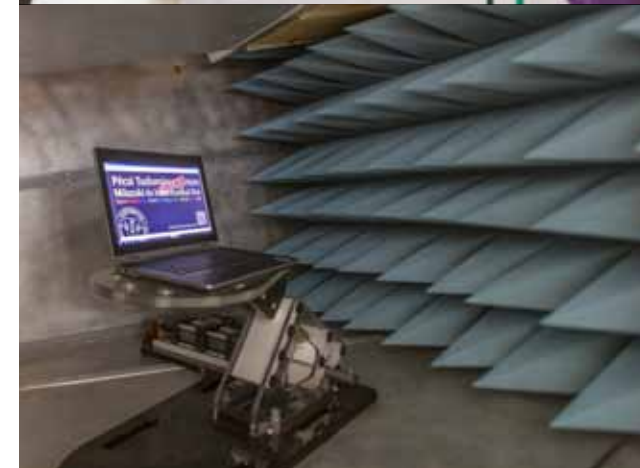
From day one, our media students 'serve on the frontline', where they go to various filming location-sequipped with cameras, tripods, diffusers and everybody has a chance to experience every task of a TV crew. Our mobile studio enables us to broadcast a variety of events, such as basketball matches. In the studio, students are taught how to handle cameras, lights, microphones and other media equipment. The basic techniques of photography are also taught.



Electrical engineering training in Pécs is unique because of the specialisations available and its focus on practice-oriented training based on advanced theoretical knowledge.

- » **Electrification and Automation of Facilities** specialists study the basics of electrical engineering, dealing with measurement technology, electrical machines and drives, electricity supply, electromagnetic compatibility, the design and operation of the electrical installations.
- » **Embedded Microcomputer Systems** focuses on electrical automation, building informatics, microelectronic systems and programming, and embedded programming. In the practical and laboratory sessions, in addition to Windows based systems, we primarily rely on Linux operating systems which are still the mainstay of industry and embedded systems. The training provides students with skills in the design, programming and operation of embedded systems.

The high standard of the practical lab based training is backed up by the awards our students have achieved in international and national competitions ranging from robotics (German Open, Robocup – 3rd place at each, 1st place in four consecutive years at the National Control Programming Competition) through to machine construction (Rexroth Pneumobil competition – 3rd place, VII International AVENTICS Penumobil competition – 2nd place) and energetics (Flextronics Innovation Award).



Laboratories and Instruments

Mechatronics Lab

With the help of Festo Hungary, this lab has been operating since 2005, and is used to teach pneumatics and electro-pneumatics which are free elective courses.

Cisco Lab

Every year hundreds of thousand people learn at the 9 000 Cisco Academies in 170 countries all over the world and our faculty has been an active member of this network for more than 15 years. For teaching purposes we use e-learning material developed and provided by Cisco Systems, which is complemented by the high-tech laboratory work.

KNX (EIB) Lab

Setting up smart homes, offices and factories requires skilled professionals and our students use the Siemens equipment in the KNX lab to stay abreast of the latest developments in this field.

Electrical Machines Lab – GTM cell

The electromagnetic measuring cell is one of the most sought after, and because of its expense, one of the rarest measuring devices. This radio frequency (RFI) equipment used for measuring interference emissions and susceptibility, is a large shielded, anechoing measuring device which is the flagship product of the American company, LINDGREN. It can be used with a frequency limit of 5 GHz when measuring emission and up to 20 GHz when measuring susceptibility, with a maximum performance of 1000 W.

In the last five years we have set up the following laboratories:

- » Measuring technology lab
- » Electronics lab
- » PLC lab
- » Robot technology lab
- » Drive technology lab
- » Electrical energetics lab



The Department of Electrical Engineering is involved in the following research projects.

Measuring the quality of electrical energy

Nowadays the quality of electrical energy is an important factor in consumer satisfaction. This research project is involved with correctly identifying and measuring the characteristics of electricity.

Measurements and research in this area are offered to industry as a service.

Increasing the Security of Supply through the Development of Medium-voltage Networks

The aim of the research is to improve the quality of electrical energy availability with the help of on-site measurements and laboratory models, and the automation of remotely controlled pole switches.

Research into Non-destructive Testing

The aim of the research is to create technical solutions which reveal the internal structure of materials without traditional sample taking and destructive testing. This technology has multiple uses, ranging from biological testing to environmental protection.

Development of Embedded Systems

The faculty is committed to researching and developing embedded software solutions to keep up with the trend that is seeing more and more embedded devices become widely available.

Our software development projects are being carried out on the following platforms in accordance with market trends:

- » Embedded Linux-based devices
- » Android-based devices
- » Devices controlled by microcontrollers
- » IoT (Internet of Things) devices

Dual Training in all Bsc Programmes

Dual training for the Mechanical Engineering BSc programme was launched in 2014 with the support and collaboration of six companies. 15 students were accepted for this programme.

Drawing on the positive experience of the 2014/2015 academic year, from September 2015, dual training is being launched for the Architecture, Civil Engineering, Mechanical Engineering, Electrical Engineering, Computer Science Engineering and Environmental Engineering BSc programmes.

Our partners include internationally recognised companies, for example Matro, Viessmann, Hauni Hungaria Machinery Manufacturing Ltd.; in the electrical engineer training EON Plc., Kontakt-Elektro Ltd., Videoton Elektro-PLAST Ltd.; in the environmental engineer training Biokom Ltd.; in the computer science engineer training, in addition to several software development companies, we have partnered with ITSH and ESRI Hungary Ltd., the market leader in GIS software.

The faculty has signed contracts with 50 companies which means that at least 100 positions are ensured for students entering dual training.

This way our students can, depending on their interests and specialisation, choose from a variety of different sized and profiled companies within a particular professional field.



Supported Language Learning

Nowadays, being able to communicate in a foreign language is not only a requirement for graduation but it is also essential for a successful career. To cater for this, the faculty has its own Lectorate of Foreign Languages for Technical Purposes which provides language classes as part of the BSc programme. It also operates as an exam centre and offers a wide range of accredited language exams (Cambridge ESOL, ÖSD, TELC, BME, Zöld Út, Lexinfo) in both English and German.

Students can enrol in advanced technical language courses which are predominantly offered in English, with some in German, Italian and French courses. The language courses are also open to Erasmus students and other international students who are studying at the university.



Programmes in English

As the result of careful preparation, we now have a teaching staff who are qualified to hold lectures in English. Following the successful accreditation of the English language architecture programme we now have 45 international students after last year's intensive promotion campaign.

English language undivided architect training was launched in the autumn of 2013 and in the same year the Educational Authority accredited both programmes (Architect Designer DLA and Architectural Engineering PhD) of the Breuer Marcell Doctoral School.

Similar to the existing architect training, from September 2015 the English language Computer Science Engineering BSc and MSc programme, the Civil Engineering BSc and the Structural Engineering MSc programme will be launched.

- » Architecture (BSc and MSc)
- » Doctor of Liberal Arts in Architecture/Doctor of Philosophy in Architectural Engineering
- » Civil Engineering BSc
- » Structural Engineering MSc
- » Computer Science Engineering BSc
- » Computer Science Engineering MSc

The engineering profession is among the qualifications which ‘shares a common language’ in all the countries of the world, which means our students acquire transferable knowledge and they are awarded a transferable degree. By keeping up with the fast-paced changes and development of technology, establishing an international way of thinking, and being open to new ideas and trends, also ensures that students are well qualified for their future profession. These would all be difficult without the university being actively involved in international relations, joint training programmes and research projects and active student and teacher exchange programmes. We are proud that over the past decades, we have established long-term partnerships for students, teachers and institutions, which connects us to the European mainstream of engineering development, architectural and construction innovations.

In addition to close cooperation with European centres of education, we have recently established a strong cooperation with the Metropolitan State University of Denver, USA. This relationship resulted in several joint projects, for instance in a **joint minor training** in Denver with the participation of the architecture and civil engineering lecturers of Pécs.

Our students and lecturers also participated in a project in cooperation with 11 Chinese universities. This led us to a new possibility of establishing a partnership with two Chinese universities: the Academy of Fine Arts, Beijing and the Institute of Technology, Shanghai.



International Partners

- 2014 Shanghai Institute of Technology, Shanghai, **China**
 - 2014 Technical College of Subotica, Subotica, **Serbia**
 - 2014 University of the West of England, Bristol, **United Kingdom**
 - 2013 Central Academy of Fine Arts, Peking, **China**
 - 2013 Polytechnic University of Tirana, Faculty of Architecture and Urbanism, Tirana, **Albania**
 - 2013 University of Shkodra, "Luigj Gurakuqi", **Albania**
 - 2013 University Education for Business and Technology, Pristina, **Kosovo**
 - 2013 School of Architecture, John Moores University, Liverpool, **United Kingdom**
 - 2013 Faculty of Architecture, University of Lisbon, Lisbon, **Portugal**
 - 2012 University of Applied Sciences, Hochschule für Technik und Wirtschaft Dresden, Dresden, **Germany**
 - 2010 School of Professional Studies at Metropolitan State College of Denver, Colorado, **USA**
 - 2010 Faculty of Architecture of the University of Zagreb, **Croatia**
 - 2010 Faculty of Architecture and Civil Engineering of the University of Sarajevo, **BiH**
 - 2010 Istanbul Kultur University, Istanbul, **Turkey**
 - 2009 University of Belgrade, Belgrade, **Serbia**
 - 2009 Faculty of Civil Engineering – University of Josip Juraj Strossmayer Osijek, **Croatia**
 - 2009 Department of Building Climatology, Faculty of Architecture of TU Munich, **Germany**
 - 2007 Faculty of Civil Engineering of Izhevsk State Technical University Udmurtia, **Russia**
 - 2006 National University of Ireland University College Cork, **Ireland**
 - 2006 Technical University Berlin, Faculty Nr. VI., **Germany**
 - 2006 University of Gloucestershire, Cheltenham, **United Kingdom**
 - 2004 Faculty of Civil and Geodetic Engineering, University of Ljubljana, **Slovenia**
 - 1999 Faculty of Civil Engineering, Technical University of Kosice, **Slovakia**
 - 1993 University of Applied Sciences, Fachhochschule Dortmund, Dortmund, **Germany**
 - 1989 University of Applied Sciences, FH Joanneum, Graz, **Austria**
 - 1985 University of Applied Sciences, Würzburg-Schweinfurt, **Germany**
- +31 HEI Partners at **Erasmus International Student Exchange Program**

Technical-engineering research topics of the Szentágotthai János Research Centre, University of Pécs

- » Energy design
- » Efficiency of resources
- » Smart City Technologies

Research teams at the Faculty

- » Energy design research team
- » Efficiency of resources research team
- » Building energetics and building ecology research team
- » Sustainable cities research team
- » Heritage protection research team
- » Computer algebraic and dynamic geometrical systems in higher education
- » Structural diagnostics and analysis research team
- » Solidarity architecture research team
- » Virtual measuring systems and machine perception

Multi-disciplinary Projects

Pollack Expo

This annual event has been organised since 2007 and is held at the Pécs Expo Centre in February or March. It hosts 150-200 exhibitors, 5-6000 visitors, specialist lectures, a job fair, the Baranya Open and the robot programming competition.

PhD – DLA symposium

There is a tradition that doctoral students present their research topics and results at an international conference. For this purpose, the International PhD and DLA Symposium has been held annually for 11 years and over the two days of the symposium an estimated 160 presentations are delivered in four different sections. The chairmen of each section are internationally renowned professors from Hungary and abroad.

Pollack Periodica

The Faculty's own scientific journal is called the 'Pollack Periodica, an International Journal for Engineering and Information Sciences' published by the **Akadémiai Kiadó**. Since 2006, nine volumes have been published containing more than 200 scientific articles. 60% of these articles were written on the subject of information technology, in fact, this is the only English language journal in Hungary that has information science in its title.



IT Services Hungary (ITSH)

This company is not only one of the biggest ICT employers in Hungary but also the winner of the 'Investor of the Year' award in 2008. As is stated on their website:

'We invest in knowledge. We have found the skilled workforce that speaks languages in Hungary with whom we are able to offer high-level services for our clients in several European countries therefore we pay special attention to our employees.'

Our Faculty has had an ongoing cooperation with ITSH since 2012. In the first year alone four successful, Hungarian and German language IT courses were completed.

SAP courses

SAP is undoubtedly the world's leading and best known enterprise business application. Students are given a 200-lesson training on its general use and interface programming.

JAVA courses

This 200 lesson course provides a comprehensive guide from the basics of Java programming to working with middleware technology.



BIM

In 2014, with the cooperation of the Faculty of Engineering and Information Technology of Pécs, Budapest University of Technology and Economics and various industrial partners, the Hungarian BIM Association was founded with several lecturers of the faculty taking board positions.

BIM (Building Information Modelling) has fundamentally changed the construction industry and it is expected that within a couple of years it is going to become an indispensable tool in architecture, engineering and construction. Because BIM systems can be linked to Primavera software, they are able to provide complex business solutions.

We continuously provide tuition in BIM for graduate and post-graduate students. Students can also learn about BIM in a specialisation offered as part of our engineer training programme.

PTE Politechnika Ltd.

This company has been operating since 1989 (earlier under the name PMMF Politechnika Kft.) as a state-owned enterprise. Its aim is to provide the opportunity for lecturers to undertake external contractual jobs (engineering work, introduction of innovative solutions, research, development and consultancy activities). Through this initiative hundreds of high-level consultancy works have been carried out by the staff of the faculty. These include:

- » examination of the earthquake safety of Paks Nuclear Power Plant (MVM) and 50 other research contracts providing innovative solutions,
- » diagnostics of rail and road bridges for the Hungarian State Railways.
- » building condition survey prior to the construction of the M6 motorway,
- » 70 scientific research contracts,
- » 40 industrial contracts requiring high-level specialised knowledge (e.g. quality control of the concreting and injection work of the radioactive storage site in Bataapáti),
- » organisation of 60 scientific conferences.

Projects, Competitions, Achievements

The close cooperation between students and teaching staff of different departments of the faculty has resulted in numerous awards at both the national and international level. These include:

Orca car – Shell Eco-Marathon Rotterdam – 7th place, National Instruments Competition 2013 – 1st place, Conti Best Programming Competition 2014 – 1st place, Supercomputer, Creaton Architecture Competition – 1st and 2nd place, 7th International AVENTICS Pneumobil competition – 2nd place, 20th Jubilee National Control Technology Programming (PLC) competition – 1st place, Engineering Students' Competition – 2nd place + T-System special award, 2nd Rex Roth Pneumobil competition – 3rd place.

Special Colleges

The members of the **b2 transdisciplinary special college** have the opportunity to carry out development work for the city of Pécs in their own specialist field. Major projects include a Makovecz Imre Memorial event, More than a Factory, a POSZT (National Theatre Festival) installation, installations and interior design for city events.

The members of the **Juhász Jenő Special Engineering and IT College** work on different, individually chosen research projects (disaster management, electro-technics, model bridge building, pneumobil competition, Shell Eco Marathon).

A grant for excellence

In appreciation of excellence, our faculty, in partnership with the Engineering Chamber of Baranya County awards a study grant to those prospective BSc students who score the highest in their university entrance exam.

Scholarships abroad

Through the Socrates/Erasmus programme foreign scholarships are available for students and the studies completed abroad are recognised in the training programme at the faculty.

Through our partner institutions we also help students obtain international practice abroad.

Awards for students

Students' work is annually awarded by foundations in connection with the different programmes of the Faculty of Engineering and Information Technology.



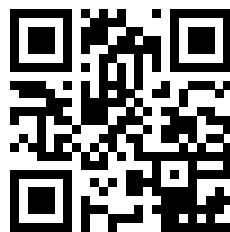
The activity of the student union of the faculty plays a major contribution to student life. The student union has a double role: on the one hand it represents students' interests at the faculty, on the other hand it organises freetime activities and manages and supports student participation in engineering competitions. The members of the student union continuously come up with creative ideas to make full use of the years spent in higher education by supporting the students' needs for study, research and sport.

The Students' Union organises several highly popular events annually such as the freshmen's camp, an 'Oktoberfest', cooking competitions, sports and health days and fishing competitions.

Students of the faculty also play a major role in assisting staff with numerous activities, such as helping to organise various open days, exhibitions, professional forums, conferences and the Pollack Expo.

Students also edit their own magazine, 'Unicum', which provides regular news and information relevant to the students.

In 2014, the webpage 'OKTOPORT' was launched by the members of the Juhász Jenő Special College as a student project. It aims to publish and popularise the engineering profession, research projects at the faculty and present their results in a clear format.



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