



FACULTY OF CIVIL ENGINEERING  
TADEUSZ KOŚCIUSZKO  
CRACOW UNIVERSITY  
OF TECHNOLOGY





## L A D I E S   A N D   G E N T L E M E N

*An old proverb popular in Poland says that Cracow was not built at once. The city, praised by historians, admired by visitors and loved by its inhabitants, has been erected for centuries by many builders and architects. But Cracow is also a city where builders and architects have been educated for a long time. Already in the 16th century, a mathematician, Stanisław Grzepski published the first Polish manual on surveying, and some time later, in 1627, another mathematician, Jan Brożek delivered the first lectures on engineering.*

*Today, the Civil Engineering Faculty of Cracow University of Technology, continues this long and beautiful tradition. This faculty is one of the cornerstones of our University, and has had a tradition of more than 70 years of activity. During these years, thousands of students have graduated from our University. Their achievements are highly praised in our country and abroad.*

*However, keeping in mind our beautiful traditions and cherishing our past achievements, we mainly think about the future. We are well aware of great challenges awaiting prospective young engineers, currently being educated at our Faculty. That is why we let them acquire the knowledge necessary to erect engineering structures meeting the standards of the 21st century – structures of modern engineering solutions, environmentally friendly, conducive to energy conservation, supported by recent advances in electronics and belonging to the class of Intelligent Engineering Structures. We educate specialists in modern road, rail, air and city transportation systems, as well as infrastructure and integrated transportation and logistical systems. Those specialists are qualified in transportation management and control, including the application of modern methods, devices and information technologies. Since recently we offer full time education in the domain of Spatial Planning. New graduates acquire the capabilities to shape and develop the spatial and functional structures of cities.*

*Due to extended scientific background and extensive research, our Faculty is a highly valued partner in cooperation with many commercial enterprises. We offer professional advice, are capable of conducting specialist examinations in accredited laboratories and putting innovative technologies into practice. A long and continually lengthening list of cooperating institutions shows that our offer receives wide recognition.*

*You are heartily welcome to cooperate with Civil Engineering Faculty of Cracow University of Technology. Young people are encouraged to enroll as students. Graduation from our Faculty opens very interesting professional opportunities.*

*Andrzej Szarata  
The Dean, Faculty of Civil Engineering  
Cracow University of Technology*

## EXCERPTS FROM HISTORY

The history of Civil Engineering Faculty of Cracow University of Technology is an accurate reflection of the history of our University – as the beginnings of our Faculty are tightly intertwined with the beginnings of the whole University.

### DIFFICULT BEGINNINGS

Cracow University of Technology was founded in 1945 on the initiative of Professor Izydor Stella-Sawicki. Initially, it operated as a separate, but highly autonomous part of the Academy of Mining and Metallurgy. The first prospective students were registered in February 1945, only a couple of weeks after the liberation of Cracow from German occupation. Tadeusz Kantarek was enrolled as the first student of Civil Engineering Faculty. The first lectures took place on June 6th, 1945, but it is October 5th, 1945, which



is considered to be the first day of activity of the Faculty known today as Civil Engineering Faculty. The existence of the Faculty was formally approved by the Polish government decree, issued on November 19th, 1946, but coming into force on April 1st, 1945. 840 students were enrolled at Land Engineering Faculty then. At that time, the Faculty was located at no 7

„Oleandry” building in 3 Maja Street. The same building was also the seat of Transportation Faculty. The building was constructed during the interwar period on the historical spot – the exact location from which the I Cadre Company of Legions departed for war. This monumental structure was designed by professor Adolf Szyszko-Bohusz, the first Dean of the Faculty of Architecture.

However, this was a temporary seat. Civil Engineering Faculty inaugurated 1948/1949 academic year at a new location in 24 Warszawska Street, in a building complex taken over from military authorities. In 1953, the faculty was subdivided into two units: Land Engineering Faculty and Water Engineering Faculty. This is how our Faculty gained independence. A year later – due to the separation of polytechnic faculties from the Academy of Mining and Metallurgy – it emerged as a Faculty of Cracow University of Technology.

## RESEARCH, TEACHING, APPLICATIONS

The polytechnic faculties of the Academy of Mining and Metallurgy were called into existence when our country needed a quick post-war reconstruction. Educating specialists in the civil engineering domain was a priority at that time. Therefore, it became necessary to increase the teaching staff numbers, in order to be able to support the expanding teaching activities. In 1947, the first doctoral degree in technical sciences was conferred upon Juliusz Korelski, which became a very important event. In 1951, the Faculty could boast of conferring the first doctoral degree in technical sciences upon Czesław Eimer – its first alumnus.

In the course of time forms of education have been differentiated. In 1955, after the existing Evening Engineering School in Cracow had been closed, the Faculty opened the Evening Studies for the Employed. In the 1960s, it opened the highest – alongside the Mechanical Faculty – number of consultation offices in the region.

The scientific and research activities were gradually expanded as well, with special interest taken in such areas as concrete and steel structures, railroad and road routes, bridge and underground structures, dynamics of structures. In recent times, the scope of research activities has been expanded to encompass energy efficient and pro-ecological building industry. All this time, cooperation with various research centers in the country and abroad has been dynamically expanded.

Various research activities have been undertaken in broad cooperation with construction companies, which resulted in successful application of many studies in industry, not only in Cracow and Małopolska, but the whole country and abroad. The research conducted at our Faculty has been used by specialists renovating and restoring historical monuments in Cracow, by managers and technical staff of large industrial plants, and by builders of the Warsaw subway as well.

# POLITECHNIKA Krakowska



## wydział



Majszczak J. Bauer A. Broński J. Borowicz J. Bratek A. Bratkański



J. Ciekiera J. Chabutńska J. Chrusciel B. Cichanowska S. Cudziach J. Cieślak



A. Dobrucki W. Duda K. Franczak T. Franczak F. Furjat W. Gerganich



W. Górniak L. Górnik J. Grabacka A. Grzesiak Z. Grefner S. Gwiżdżała B. Habuda A. Jakóbczak S. Janowski A. Jarmundowa Z. Kwikowski E. Kotytko J. Kowalski A. K...



H. Marek K. Managanicz I. Mika E. Miller J. Mirek P. M. Klasinski B. Murzeńska J. Nawrot J. Nowak S. Niemiec D. Pezarska S. Porębski J. Procter B. Pr...



W. Swoboda A. Słona S. Soffrys W. Strugała T. Strychaczek A. Stachowicz A. Szwarczewski A. Szewcowska Z. Tokarz J. Turek M. Wątarek S. Wilkosz



F. Wójciak B. Zielińska J. Ziemska



Prof. dr inż. J. STELLA-SAWICKI Prof. dr inż. B. KOPYCIŃSKI Z. prof. mgr inż. M. FUKSA



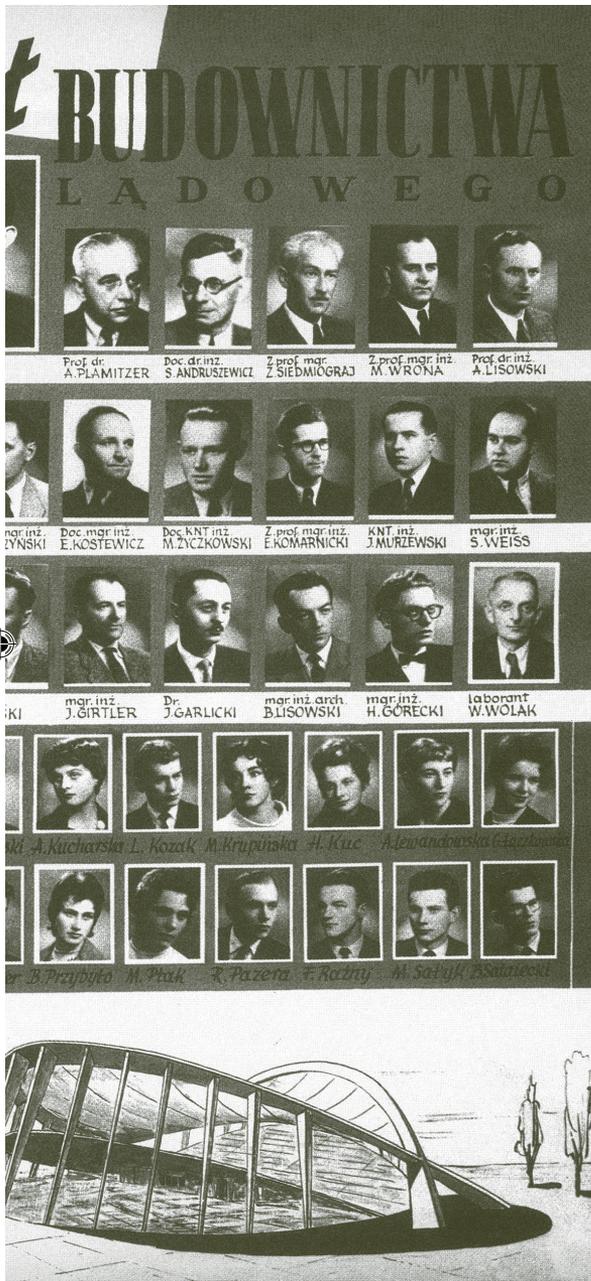
Z. prof. mgr inż. R. CIESIELSKI Z. prof. mgr inż. F. WÓJNAROWSKI Prof. arch. S. MIELNICKI Doc. mgr inż. J. WĄTORSKI Z. prof. dr. W. BOŃNIECKI Z. prof. mgr inż. W. MUSZYŃSKI



mgr inż. D. MISCHKE mgr inż. W. POGANY mgr inż. M. RYDLEWSKI mgr inż. S. SOLESZKIEWICZ mgr inż. J. MEYNAJCZYK mgr inż. E. LEŃSKI

### ABSOLWENCI — 1953 — sekcji KONSTR. BUDOWLANYCH i ORGANIZACJI BUDOWY — 1958





## NEW STRUCTURE, NEW NAME

In 1970, several important changes were made to the organizational structure of the Faculty. Eleven existing Chairs were dissolved, and four Institutes were created instead. Two additional Institutes were added in the 1990s, with Chairs and Divisions within the Institutes. The next important change of a formal character occurred on September 1st, 1987. On this day, the name Civil Engineering Faculty came into existence.

At the turn of 1989, the Faculty, and the whole University, had to face the reality of market economy. It was proved, that not only does it belong to the leading faculties of its University, but may also be counted among the best Civil Engineering faculties in Poland.

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## FAMOUS PERSONALITIES OF THE FACULTY

Numerous outstanding researchers and scientists have contributed to the Faculty's strong position. It is impossible to list all of them, but undoubtedly, professor Izydor Stella-Sawicki (1881-1957), a specialist in structural analysis of structures, deserves to be mentioned here. He was a co-designer of two aircraft hangars at Czyżyny airport and the academic sanatorium in Zakopane. He will be remembered by all employees of Cracow University of Technology as the organizer and the first Rector of the Polytechnic Faculties at the University of Mining and Metallurgy.

The astronomer and inventor of the cracovian calculus, professor Tadeusz Banachiewicz (1882–1954), the head of the Chair of Higher Geodesy and Astronomy, may be counted among the first lecturers at the Faculty of Civil Engineering.

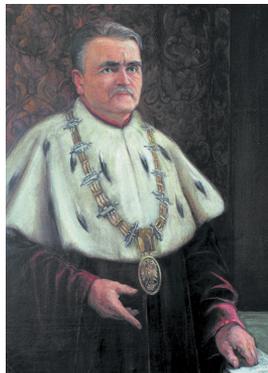
Professor Bronisław Kopyciński (1907-2004), a specialist in the domain of concrete structures and technology, was also associated with the Faculty. In the years 1953-1956 he held the position of the Dean of Civil Engineering Faculty, and in 1956 he became the first Rector of Cracow University of Technology, elected by the Academic Senate. He was the

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## RECTORS OF CRACOW UNIVERSITY OF TECHNOLOGY FROM FACULTY OF CIVIL ENGINEERING



IZYDOR STELLA-SAWICKI  
1945–1948



BRONISŁAW KOPYCIŃSKI  
1956–1965



KAZIMIERZ SOKALSKI  
1965–1968

only person to hold this post for three terms.

Professor Roman Ciesielski (1924-2004), the Doctor Honoris Causa of our University, a highly esteemed specialist in structural analysis and dynamics of structures, was also a prominent personality, not only in the academic circles. He was a Deputy Dean of the Faculty from 1956 to 1958. In 1981, during the period of the first „Solidarity”, the Academic Senate elected him the Rector of our University. In 1982, during the martial law rule in Poland, he was removed from office for political reasons.

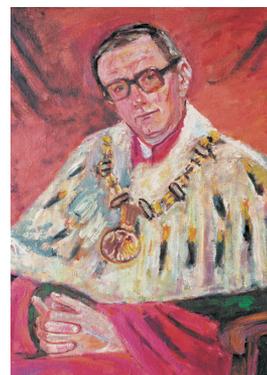
Altogether nine Rectors of Cracow University of Technology have been graduates of Civil Engineering Faculty, including the Rector elected for the 2008-2012 and 2012-2016 terms, professor Kazimierz Furtak.



JAN WĄTORSKI  
1968-1972



WŁADYSŁAW MUSZYŃSKI  
1987-1990; 1972-1975



ROMAN CIESIELSKI  
1981-1982



KAZIMIERZ FLAGA  
1996-2002



MARCIN CHRZANOWSKI  
2002-2005



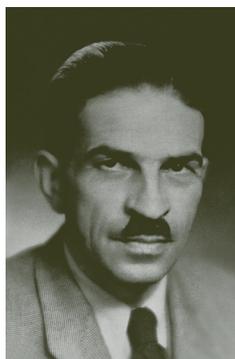
KAZIMIERZ FURTAK  
2008-2016

DEANS  
OF THE  
FACULTY

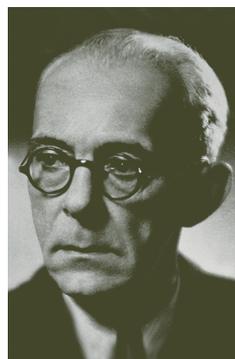
1945-1953  
FACULTY OF CIVIL  
ENGINEERING  
(UNIVERSITY  
OF MINING AND  
METALLURGY)



EDMUND WILCZKIEWICZ  
1 X 1945 - 5 IV 1946



MARIAN KAMIŃSKI  
16 IV 1946 - 1946/47



WŁODZIMIERZ RONIEWICZ  
1947/48 - 1951/52

1954-1984  
FACULTY  
OF LAND  
ENGINEERING,  
CRACOW  
UNIVERSITY  
OF TECHNOLOGY



BRONISŁAW KOPYCIŃSKI  
1953/54 - 1955/56



MICHAŁ FUKSA  
1956/57 - 1957/58



KAZIMIERZ SOKALSKI  
1958/59 - 1964/65

1985-  
FACULTY  
OF CIVIL  
ENGINEERING,  
CRACOW  
UNIVERSITY  
OF TECHNOLOGY



STEFAN PIECHNIK  
1984/85 - 1989/90



ANTONI STACHOWICZ  
1990/91 - 1995/96



KAZIMIERZ FURTAK  
1996/97 - 2001/02



MIECZYŚLAW WRONA  
1952/53



JAN WĄTORSKI  
1965/66 – 1967/68



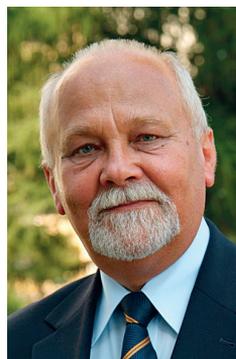
STEFAN PIECHNIK  
1968/69 – 1972/73



KRZYSZTOF PIWOWARSKI  
1973/74 – 1977/78



WŁADYSŁAW MUSZYŃSKI  
1978/79 – 1983/84



JACEK ŚLIWIŃSKI  
2002/03 – 2007/08



TADEUSZ TATARA  
2008/09 – 2015/16



ANDRZEJ SZARATA  
2016/17–

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## SCIENTIFIC AND RESEARCH ACTIVITY AND COOPERATION OFFER FOR INDUSTRY

The scientific and research activities conducted at Civil Engineering Faculty, Cracow University of Technology, are closely linked to the requests and priorities of the national economy. A lot of research subjects are investigated in cooperation with industry or institutions specializing in such areas of research. A significant part of research activities is addressed to business enterprises. This offer is broad and diverse, partly due to numerous cooperation agreements with business enterprises or self-government institutions.

The broad research interest areas result in a wide and diverse scope of scientific and research activities. The research is conducted by the following subordinate entities of the Faculty:

- Institute of Materials and Engineering Structures,
- Institute of Road, Railroad and Transportation Engineering,
- Institute of Management in Construction,
- Institute of Structural Mechanics,
- Institute for Information Technology in Civil Engineering,
- Malopolska Laboratory of Energy Efficient Housing [MLBE].

Main directions of scientific and research activities:

measurements of energy consumption in a building with application of selected technologies and installations, analyses of the influence the heating ventilation and air conditioning systems exert on the comfort of use parameters, measurements of heating and acoustic comfort in building compartments

thermal characteristics measurements for analyzed building partitions, analyses and modeling of sun radiation generated internal heat gains through transparent and non transparent partitions into enclosed compartments

analysis of the influence the automation, regulation and intelligent management systems exert on the energy consumption and quality of internal microclimate

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methods of estimating the operating costs of particular systems in the context of expected investment costs on the tested technologies, modeling and dynamic simulations of energy efficiency for energy efficient buildings using specialized computer programs

building physics, energy efficient building design, unconventional energy sources for building heating

design and maintenance of new generation buildings (so called intelligent buildings) and automated building control

problems within the scope of mineral building materials engineering, improvements in building materials' and structures' investigation methodology, durability of building materials and structures, corrosion protection, new erection technologies of buildings and engineering structures, strengthening and reconstruction of engineering structures, technology of concrete and prefabrication, prestressed concrete structures, reinforced concrete structures

computer modeling of concrete and reinforced concrete, masonry and wooden structures, prefabricated and combined structures, probabilistic design methods, metal structures, bridge and tunnel design theory

traffic engineering covering: investigation of traffic processes, analyses of road and intersection capacities, safety of traffic and transportation infrastructure, environmental protection in transportation, basics and improvement of transportation infrastructure design methods

transportation systems planning, including technical and economic studies of transportation corridors, transportation networks planning

modeling of mass transit and individual transportation systems

planning and design of transportation solutions friendly towards the unprotected traffic participants

integration of the functional and spatial structure in the city with transportation systems

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airport infrastructure management, traffic control systems, reliability and safety of air traffic, airport maintenance

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management in transportation and logistics companies, intelligent transportation systems' design, application of telematics to road traffic, city logistical systems

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road and railroad construction including the problems of technology as well as road, railroad and airport pavement mechanics

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structural mechanics and dynamics including seismic and paraseismic excitation as well as wind loads

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mechanics of elastic, viscous and plastic materials including the contact or damage problems

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computational methods in the theory of structures and mechanics of materials, application of artificial intelligence methods in structural mechanics, computer simulations and support of structural design process

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formulation and solution of optimal structure shaping and steering problems

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information systems, computer graphics and modeling in building industry

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organization and management of building and transportation processes, simulation methods of building process standardization, business enterprise management, financial and human resources management, shaping of market strategy and policy, definition of Lifetime Cost Cycle (LCC) for building structures; BIM – Building Information Modeling (3D – design, 4D – time, 5D – cost, 6D – service)

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For many years, specialists employed at our Faculty have supported external corporations in solving particular research problems and prepared scientific and technical expert appraisals, including those requested by courts of law. Design duties and economic analyses constitute a substantial part of expert activities. Cooperation with business entities results in numerous studies, often non-standard, which deal with prestigious construction enterprises. Our experts conduct diagnostic investigations of building materials and

products. They introduce modern structural repair and strengthening methods, investigate the influence of mining tremors on engineering structures and deal with protection schemes against such tremors, evaluate the influence of vibrations on buildings and people inside those buildings, design vibration monitoring systems (works within this domain of research were performed, among others, for the Warsaw subway), test building models in a wind tunnel and perform wind load calculations for buildings. They also conduct unique research in natural scale on limiting the energy consumption, consult the designs for energy efficient buildings and investigate the thermal comfort parameters in response to the regulations introduced by the EU in this domain. Experts employed at our Faculty offer assessments on accident causes on construction sites, appraisals of building structures' technical conditions, and projections about return on investments.

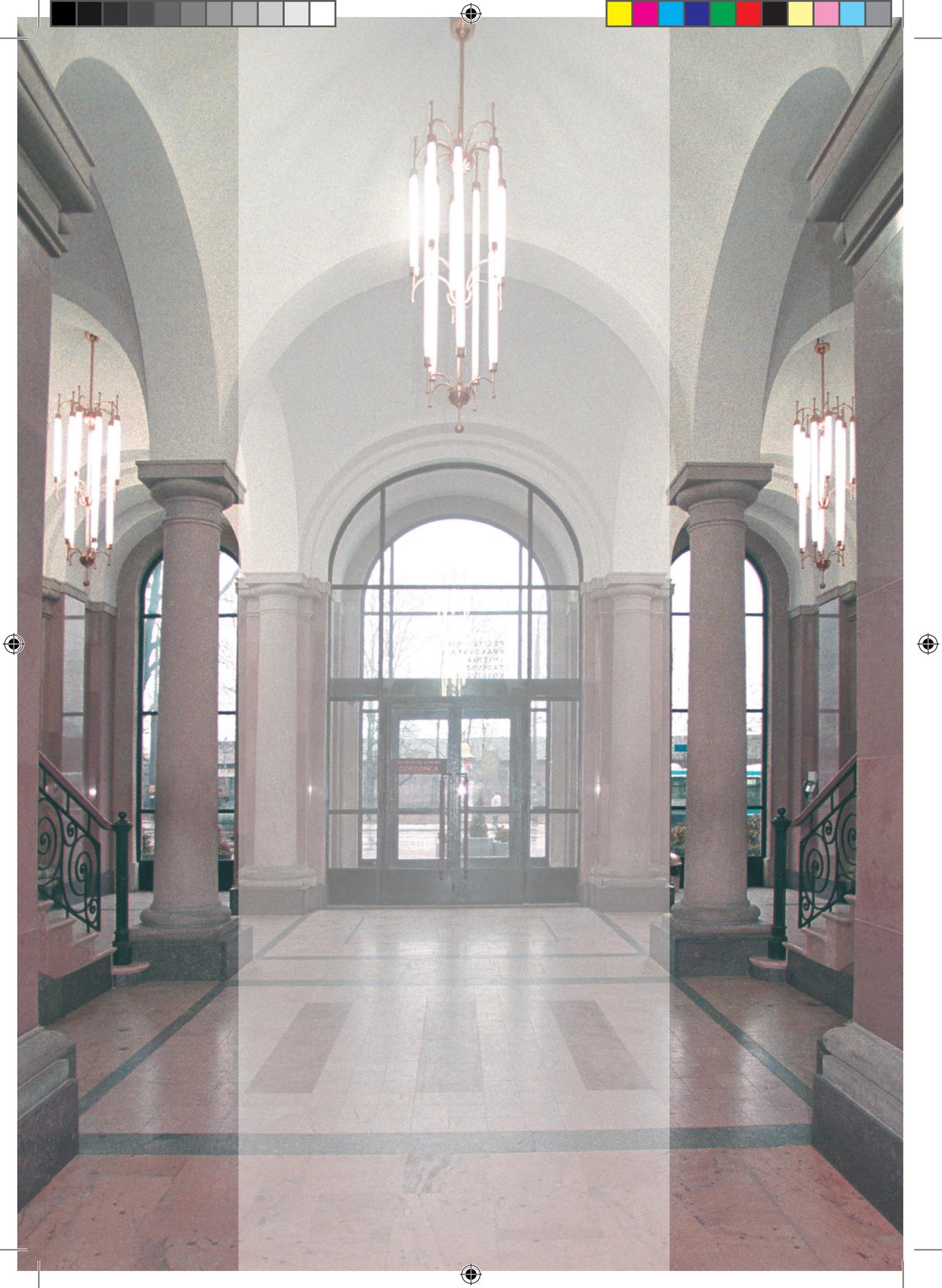
Designs, expert appraisals and studies are made by experts employed at our Faculty within the domain of transportation at the request of business entities. These include, among many others, analyses dealing with improvements to road and railroad networks as well as airport infrastructure development.

In the area of road, railroad and transportation engineering, the specialists employed at the Faculty design, carry out expert appraisals and research studies to satisfy the needs of economic sector. Among others the analyses pertaining to the improvements in road and railroad networks as well as the development of air transportation infrastructure, are prepared. The analyses of transportation systems development in cities are performed using the state of the art methods and professional computer programs. Special attention is paid to planning the sustainable transportation systems taking into account the needs of mass transportation as well as pedestrians and cyclists.

Moreover, we offer extensive help in the development and application of advanced numerical methods in civil engineering, for instance effective analysis of linear and nonlinear boundary value and combined initial-boundary value problems.

A wide range of scientific and research activities may be undertaken at our Faculty, or is well within our capabilities. We are willing to approach research problems and scientific challenges arising in dynamically developing modern construction and transportation industries. Our research staff, using technical means of research creatively, is able to deal with those challenges successfully.

The scope of research activities presented above, undertaken at Civil Engineering Faculty, Cracow University of Technology, opens a path to further cooperation with business enterprises, self-government entities and other institutions.



The most important challenge facing the Faculty in the incoming years lies in gaining the status of regional leader in the research and teaching within the widely understood domain of building industry, but especially the energy efficient and “intelligent” one, environmental actions, modern building materials, and transportation.

## EDUCATIONAL OFFER OF OUR FACULTY

### CIVIL ENGINEERING MAJOR (IN POLISH)

1<sup>st</sup> cycle studies, daytime schedule (3,5 years) - no specialties

2<sup>nd</sup> cycle studies, daytime schedule (1,5 years) – the following specialties:

Air transport infrastructure

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Bridges and underground structures

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Building and engineering structures

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Building Information Modeling (BIM)

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Building structures and environment

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Intelligent building structures

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Management and marketing in civil engineering

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Mechanics of materials and engineering structures

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Railroads

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Roads, streets and highways

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Technology and organization in civil engineering

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Water and municipal engineering

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1<sup>st</sup> cycle studies, weekend schedule (4,5 years) – the following specialties begin in the 5<sup>th</sup> semester:

Building and engineering structures

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Railroads

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Roads, streets and highways

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Technology and organization in civil engineering

2<sup>nd</sup> cycle studies, weekend schedule (2 years) – the following specialties:

Applications of information technology in civil engineering

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Bridges and underground structures

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Building and engineering structures

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Intelligent building structures

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Management and marketing in civil engineering

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Mechanics of materials and engineering structures

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Railroads

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Roads, streets and highways

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Technology and organization in civil engineering

3<sup>rd</sup> cycle studies, daytime schedule (doctoral – 4 years), field of knowledge:

Civil Engineering

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## CIVIL ENGINEERING MAJOR (IN ENGLISH)

1<sup>st</sup> cycle studies, daytime schedule (3,5 years)

2<sup>nd</sup> cycle studies, daytime schedule (1,5 years) – the following specialties:

Building and engineering structures

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For qualifying persons with a good command of English, the Faculty of Civil Engineering, Cracow University of Technology offers tuition free studies in Civil Engineering. Studies are aimed at educating future engineers who will not only gain expertise in the field of modern building industry, but also master fluency in technical English, so necessary in today's labor market.

The graduates, for whom Civil Engineering is their major, may apply for a professional certificate in Civil Engineering after they have had a required amount of professional training.

## T R A N S P O R T A T I O N   M A J O R

1<sup>st</sup> cycle studies, daytime schedule (3,5 years) – no specialties

2<sup>nd</sup> cycle studies, daytime schedule (1,5 years) – the following specialties:

Air transport

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City transport

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Intelligent integrated transportation and logistical systems

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Freight forwarding

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Rail transport

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1<sup>st</sup> cycle studies, weekend schedule (4,5 years) – no specialties

2<sup>nd</sup> cycle studies, weekend schedule (2 years) – the following specialties:

City transport

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Freight forwarding

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Transportation and logistical systems

3<sup>rd</sup> cycle studies, daytime schedule (doctoral – 4 years), field of knowledge:

Transportation

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## S P A T I A L P L A N N I N G M A J O R

1<sup>st</sup> cycle studies, daytime schedule (3,5 years) – no specialties

(conducted in cooperation with the Faculty of Environmental Engineering)

2<sup>nd</sup> cycle studies daytime schedule (1,5 year) – the following specialties

(conducted in cooperation with the Faculty of Architecture):

Town planning and transportation

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Spatial planning is a modern field of study initiated at Cracow University of Technology in the 2012/2013 academic year (1<sup>st</sup> cycle studies) and 2016/2017 academic year, (2<sup>nd</sup> cycle studies) providing an interdisciplinary knowledge on the spatial organization of social and economic development, the principles and techniques of planning, general economic, natural and social knowledge as well as expert knowledge of conditions, principles and techniques of shaping space planning, as well as development of technical and transport infrastructure.

Professional title is conferred upon a graduate after completion of an education cycle:

- Engineer (after the 1<sup>st</sup> cycle),
- M. Sc. in engineering (after the 2<sup>nd</sup> cycle),
- Ph.D. in technical sciences (after the 3<sup>rd</sup> cycle).



WYDZIAŁ

INŻYNIERII

LĄDOWEJ



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## I N T E R N A T I O N A L   E X C H A N G E

A growing number of the Faculty students may expand their knowledge at universities abroad, especially within the framework of Erasmus+ exchange program. The Faculty cooperates with more than 50 universities in Europe. Outstanding students may take advantage of an individual teaching plan and individual teaching program, created under tutorial supervision. Those interested, may participate in numerous extracurricular teaching initiatives: competitions, research camps, training excursions.

## L I F E L O N G   L E A R N I N G

Lifelong learning, an important part of the strategy of our University, is carried out at the Faculty through postgraduate studies and courses. The substantive scope and subject matter of the courses is directly connected with the needs of the country's economy.

### POSTGRADUATE STUDIES (1 OR 2 SEMESTERS LONG):

Airport infrastructure management

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Cost estimation and planning of construction works

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Cost management of construction project

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Coordinator of the occupational safety and health protection in building industry

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FIDIC procedures in building activities taking into account the Law on Public Procurement

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Postgraduate studies in real estate appraisals

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Road traffic engineering

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Urban public transportation system – management, organization, modern technologies and computer support

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## C O U R S E S   A N D   T R A I N I N G

Auditing road traffic safety

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Construction company management

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Cost estimation of construction works

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Cost estimation using the Zuzia computer program

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## G U A R A N T E E D   Q U A L I T Y O F   S T U D I E S

Young people, beginning their academic career at the Faculty of Civil Engineering, may be sure that they will receive a solid basis of engineering knowledge. The accreditation by the Polish Accreditation Committee granted to the Civil Engineering and Transportation fields of study testifies to that. Our achievements make the Civil Engineering Faculty of Cracow University of Technology one of the biggest and highly esteemed Civil Engineering faculties in Poland.

The Faculty owes the high level of education quality to its research and teaching staff. We have numerous prominent specialists, well known both in Poland and in foreign research centers. Thanks to this highly qualified teaching staff the Faculty is authorized to confer the Ph. D. and D. Sc. degrees, and conduct the proceedings to confer the title of professor in two fields of knowledge: Civil Engineering and Mechanics. The Faculty is also authorized to confer the Ph. D. degree in the third field of knowledge: Transportation.

## F A C U L T Y   A C C R E D I T A T I O N S

Accreditation is a formal agreement by the State Committee to teach students within a certain area of knowledge, issued after a thorough inspection of study programs, teaching cadre and widely understood quality of instruction. One should mention here, among others, the housing conditions, quality of laboratories, organization of financial support for students and PhD students, activity of Student Research Circles, organization of international exchange, distance



learning, broadening of the teaching offer tailored to the needs of the market, organization of student internships, monitoring of the educational outcomes and the graduate careers.

The obligatory accreditation by the Polish Accreditation Committee is performed every five years. The Faculty itself applied for the accreditation by the Accreditation Committee for Technical Universities (KAUT). Possession of the KAUT certificate is a prestigious distinction (KAUT is a member of ENAEE – European Network for Accreditation of Engineering Education). The Faculty obtained the KAUT accreditation for Civil Engineering as one of only four Faculties in Poland, while for Transportation as the first and only one! The information on the accreditations granted to the Faculty may be found in the diploma supplements issued to each graduate after successful completion of studies.



## TEACHING AND RESEARCH BASE

The rich and well equipped teaching as well as research facilities and laboratories foster the exploration of building art arcane. The modern laboratory base at the Faculty comprises of the unique in the country scale Małopolskie Laboratory of Energy Efficient Housing, Wind Engineering Laboratory, two accredited laboratories: Engineering Structures Strains and Vibrations Research Laboratory and Building Materials and Structures Research Laboratory as well as Road Materials and Pavements Laboratory. The Wind Engineering Laboratory is equipped with boundary layer wind tunnel, thus enabling model research within the scope of wind action on building structures, experimental investigations of small wind turbines and nonstandard snow loads. The accredited Engineering Structures Strains and Vibrations Research Laboratory enables the research on, among others, the influence of vibrations on humans and building structures. The accredited Building Materials and Structures Research Laboratory enables the strength testing of building materials and components of engineering structures. In the Building Physics Laboratory the students may get acquainted with energy efficient technologies. The Road Materials and Pavements Laboratory, apart from standard research – as one of only a few in the country – performs the tests of fatigue properties for road pavement structures. The laboratory classes supplement the theoretical knowledge by the capability to solve the practical engineering problems.

The students at the Faculty have access to the computer labs equipped with professional computer programs for performing engineering calculations. The same computer programs as are used in the world leading research labs are used during the classes on transportation network planning. The classes are taught with application of multimedia teaching aids, and the comfort of study is enhanced by the fully air conditioned environment.



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L A B O R A T O R I E S   A T   T H E   C I V I L  
E N G I N E E R I N G   F A C U L T Y

Accredited Engineering Structure Strain and Vibration  
Research Laboratory

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Accredited Materials and Building Structures Research  
Laboratory

---

Air Conditioning and Heating Systems Laboratory

---

Building Materials Laboratory

---

Building Physics Laboratory

---

Chemistry Laboratory

---

Computer Science Laboratory

---

Concrete Technology Laboratory

---

Control Systems Laboratory

---

Design Laboratory of Energy Efficient Buildings

---

Expertise Laboratory (opinions and rulings) within  
the research domain of MLBE

---

Internal Comfort Laboratory

---

Modeling and Analyses Laboratory

---

Road Materials and Surfaces Laboratory

---

Soil Mechanics Laboratory

---

Strength of Materials Laboratory

---

Traffic Engineering Laboratory

---

Transportation Systems Laboratory

---

Wind Engineering Laboratory

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MAŁOPOLSKIE  
LABORATORY  
OF ENERGY  
EFFICIENT  
HOUSING



Małopolskie Laboratory of Energy Efficient Housing is an experimental intelligent building, allowing for an interdisciplinary research in the natural scale, on energy efficient technologies applied in building industry. The whole building with internal installations, integrated process control systems and specialized measurements system form an experimental training ground, where the real process flows are investigated “in situ”. With respect to the research equipment and computer programs within the domain of energy efficient housing MLBE is on par with the best equipped research labs in Europe. The laboratory is equipped with, among others, climate chamber, 3d thermal vision equipment, thermal mannequin, Particle Image Velocimetry (PIV) system, climate and sun radiation simulation chamber, lambda meter with rotating system, and self propelled robotic device to evaluate the thermal comfort.



MLBE is equipped with computer programs allowing for dynamic energy simulations and optimization of processes occurring in energy efficient buildings (for instance Ansys Fluent, Design Builder, Antherm, SAT, WUFI, TeknoSim, PHPP, PhisBel, Statistica). A well trained and experienced technical and engineering staff comprising of specialists: architects, structural engineers, HVAC engineers, automation engineers and building physics experts is employed at the lab.



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## R E S E A R C H C I R C L E S

Students at the Faculty may expand their knowledge through participation in research circle activities. Sixteen student research circles, working under the auspices of Chairs and Divisions at the Faculty, are currently active:

Bridge Structures Research Circle

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Building Materials and Concrete Technology Research Circle

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Computer Science Applications Research Circle

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Economy and Marketing Research Circle

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Geologist Research Circle „KWARC”

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Innovative Buildings Research Circle „InBud”

---

Logistics Research Circle „TILOG”

---

Organization in Building Industry Research Circle

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Prestressed Concrete Research Circle

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Railroad Research Circle

---

Reinforced Concrete Research Circle „CONKRET”

---

Research Circle „EcoPower”

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Road Engineers Research Circle “WIRAŻ”

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Structural Mechanics Research Circle

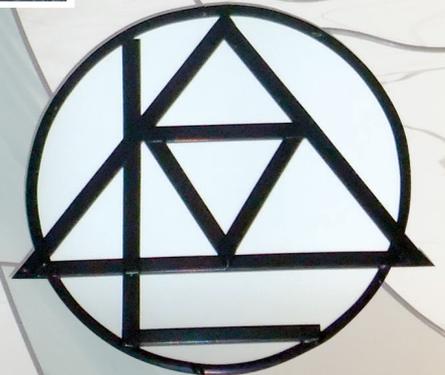
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Transportation Systems Research Circle

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Wooden and other Traditional Building Materials Research Circle „KORNIKI”

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**UNIA EUROPEJSKA**  
EUROPEJSKI  
FUNDUSZ SPOŁECZNY



## **PARTICIPATION IN EUROPEAN PROGRAMS**

The teaching potential of our Faculty is constantly expanded through our participation in the programs co-financed by the European Union.

### *Expansion of teaching potential at Cracow University of Technology within the scope of modern building industry*

A countrywide project carried out within the framework of the Human Capital Operating Program (until 2015). The main objective of this project was defined as expansion and potential improvement of CUT through strengthening and better adjustment of the teaching offer in the domain of building industry to the needs arising in modern economy. It envisaged the modification of 1st and 2nd cycle studies with Civil Engineering major, including lectures conducted in English, raising the teaching staff competence (through professional English language courses) and the offer of nine courses for professionals with the scope defined by the then current needs of economy.

[www.civ-eng.pk.edu.pl](http://www.civ-eng.pk.edu.pl), [www.szko-bud.pk.edu.pl](http://www.szko-bud.pk.edu.pl)

### *Modern building industry – post-graduate studies*

This countrywide project was carried out within the framework of the Human Capital Operating Program (until 2012), and was directed towards employees (including self-employed) active in construction, computer science, architecture and design, as well as expert companies. The project objective was defined as "the adjustment and adaptation of knowledge and abilities previously acquired by civil engineers to the present needs of the economy". The project was based on post-graduate studies offered in three areas of interest: cost management of building enterprise, energy efficient building industry, and design of building structures according to Eurocodes.

[www.stu-bud.pk.edu.pl](http://www.stu-bud.pk.edu.pl)



## KAPITAŁ LUDZKI

CZŁOWIEK - NAJLEPSZA INWESTYCJA!

### *The development of teaching potential of Cracow University of Technology – postgraduate studies, training, courses*

This project was implemented within the framework of Human Capital Operational Program until the year 2012, with nationwide reach. The offered postgraduate studies, training and courses, as well as their topics and program constituted a response to the then current needs of the national economy. The courses were oriented on training in real life situations, both in the laboratory and in the field. Participants were trained on case studies and projects that reflected the most current issues. The students were intended to work with specialized computer programs, in computer labs, do design work, and train on possible events scenarios.

[www.szkus.pk.edu.pl](http://www.szkus.pk.edu.pl)



UNIA EUROPEJSKA  
EUROPEJSKI FUNDUSZ  
ROZWOJU REGIONALNEGO



### *Creation of the laboratory complex at Civil Engineering Faculty, Cracow University of Technology*

This project was carried out within the framework of the Małopolska Regional Operating Program (until 2011), and concentrated on further development of teaching infrastructure at Cracow University of Technology, used by Civil Engineering Faculty students majoring in Civil Engineering. The scope of this project consisted of development, enhancement and modernization of the laboratory base at the Faculty. Additional laboratory equipment allowed for more technologically advanced research. Technical parameters of the new equipment purchased through the program funding, yielded savings in energy and water usage, and also limited the noise and vibrations around research stations. Versatile research stations provided equipment for the research center – unique in the region, thus creating perfect conditions for teaching civil engineers. Computer laboratories met the requirements of modern trends in building industry, where advanced engineering programs constitute an indispensable supplement of an engineer's toolbox.

**UNIA EUROPEJSKA**  
EUROPEJSKI  
FUNDUSZ SPOŁECZNY



## IMPORTANT PROJECTS

### SZKOMES

Cracow University of Technology ran the courses for the employees of small and medium-sized companies, the subject matter dealing with Finite Element Method (FEM), its basis and practical application in engineering problems. The course objective was to increase the participants' knowledge in FEM area and to enhance their ability to apply this method effectively in order to solve real engineering problems. Among the benefits for the employers, the following could be listed: further the specialist employee's qualifications to cope with the changing design and engineering calculations market; the ability to adapt new approaches in the domain of computer methods; increased operational efficiency, increased competitive edge on the market, and the possibility to enter the mutually beneficial cooperation with the University.



CARAVEL project, implemented between 2005 and 2009 within the 6 EU Framework Program. The following partners participated in the program:

- city authorities: Genoa, Burgos, Cracow, Stuttgart,
- Universities in these cities, including Civil Engineering Faculty, Cracow University of Technology,
- mass transit system operators in these cities,
- systems and code suppliers,
- private research and consulting companies,
- public research and development agencies,
- non-profit organizations.

New solutions aimed at improving city mass transit systems, and thus improving the quality of the environment, were the common objective of the participants.



## KAPITAŁ LUDZKI

CZŁOWIEK - NAJLEPSZA INWESTYCJA!



MAX is one of larger research programs within the 6th Framework Program dealing with Mobility Management. 25 partners from 16 European countries participated in this program, which was launched in October 2006. The executing consortium attempted to standardize, disseminate and promote mobility management tasks and tools. Those tools oriented at public administration, investors and non-government organizations could be applied during the stages of planning, design, execution and operation of capital investment.



The „TraCit” project conducted in the years 2010-2011 belonged to the group of POWER projects within the framework of the Interregional Cooperation Program INTERREG IVc. The dissemination of knowledge and best practices oriented on the reduction of CO<sub>2</sub> emissions in transportation and promotion of solutions leading to the development of sustainable transportation system, based on strategies limiting the use of individual passenger cars in trips, reducing the use of fossil fuels, and instead using the alternative fuels. These solutions shall support the sustainable development of urban centers, thus favoring the improvements in environment and life quality, inhabitants' health, effective use of resources, limiting the transportation costs and in a wider sense – favor integration and social equality.

Cracow University of Technology, as the partner in this project, was active in accomplishing the following tasks:

- Evaluation of Cracow's transportation policy regarding the influence of this policy on reducing the emission of CO<sub>2</sub>,
- Creation and evaluation of variants in Cracow's transportation system development with respect to the CO<sub>2</sub> emission levels,
- Creation of urban zones spatial development scenarios and comparison of these scenarios with respect to the CO<sub>2</sub> emissions, taking into account varied degree of settlement concentration or deconcentration and multi-functionality of zones,

- 
- Research on the influence the innovative transportation solutions (among others: separated bus lanes, Park&Ride system, carpooling) exert on the decrease of CO2 emissions.



„Galileo Signal Priority” project, conducted in the years 2012-2014 within the 7th European Framework program. The following partners participated in this program:

- PWP Systems GmbH,
- Telematix Services a.s.,
- Széchenyi István Egyetem,
- Cracow University of Technology.

Cracow University of Technology was responsible for the development of innovative traffic lights control solutions, including the algorithms supporting the prioritization for public transportation systems on two intersections in Halle and Cracow.



The „CIVITAS CAPITAL - making the best of CIVITAS” has been in operation since 2013 by a consortium consisting of 14 partners from 10 countries. The purpose of this project is to promote the good practice in the domain of innovative solutions for urban transportation, as developed by the already accomplished CIVITAS initiative projects, including educational and marketing actions. A CIVINET network of CIVITAS cities – hubs participating in CIVITAS projects in the past – ready to share their experience, and cities, which would like to take advantage of this experience, is currently being developed in Poland. CIVITAS CAPITAL is an information sharing platform lending an opportunity to participate in workshops and meetings with experts coming not only from Poland but also from other European countries. The Polish CIVINET network shall, in the minds of its creators, disseminate every effective or innovative action, which shall bring cities closer to achieving a sustainable transportation system. The project thus promotes interesting innovative actions implemented within the „Week of sustainable mobility” and „A day without car”.



The „SmartMove” project has been in operation since 2014 within the framework of UE IEE (Intelligent Energy Europe) program by a consortium consisting of 11 partners coming from 8 countries. The „SmartMove” project is intended to introduce innovative marketing and

mobility solutions in eight rural, suburban and peripheral European regions. This project is to deliver necessary information to the inhabitants and encourage the people to use the public transportation means in the region.



#### *Małopolskie Laboratory of Energy Efficient Housing (MLBE)*

*The investment project undertaken at the Cracow University of Technology in the years 2012-2014 within the framework of Małopolski Regional Operational Program. It was intended to create the scientific research background for analyses, evaluation and implementation of modern technological, material and structural solutions for energy efficient housing. MLBE was developed as scientific research division of the Faculty of Civil Engineering of Cracow University of Technology, and combines interdisciplinary approach to the design and erection process of energy efficient buildings. The MLBE project was dedicated to investigate the various technologies and building installations within the domain of energy efficient housing.*

*The group of Building Schools in Tarnów teamed with Cracow University of Technology to accomplish this project. The „Energy Efficiency Proving Ground” was erected in Tarnów to create the place where the energy efficient technologies would be implemented.*



#### *Innovative means and effective methods to improve the safety and durability of building structures and transportation infrastructure in the sustainable development strategy*

The project conducted in the years 2010-2014 within the framework of Innovative Economy Operational Program. Teams of employees of the Faculty of Civil Engineering, Cracow University of Technology, have carried out research on five topics within the domain of: new methods for assessing the safety and usability of structures, development of innovative building materials and methods of their design in terms of required usability and durability and issues related to innovative methods of creating and using knowledge representation in civil engineering, shaping of transportation infrastructure with the sustainable development strategy taken into account.

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## FACULTY ACHIEVEMENTS

In recent years, the Faculty has taken pride in numerous successes within the domain of science and research, teaching and lifelong education, improvements to the teaching base and organization.

It is particularly noteworthy, that the Faculty in the year 2014 again received the positive institutional assessment of Polish Accreditation Commission and KAUT accreditation in 2016.

The Faculty of Civil Engineering is well positioned on the education market. Education at all the fields of study is based on the needs of economy, assumed development priorities, competences of the teaching staff and interest of candidates. The results of the admissions process confirm the role and position of the Faculty on the education market. The Faculty position on the education market stems from systematic development of the cooperation with the local economy. Faculty of Civil Engineering is a name well known among the employers, and the knowledge gained in the fields of study offered at the Faculty yields the Graduate a high chance to find an employment in accordance with the learned profession.

## SCIENTIFIC AND RESEARCH ACHIEVEMENTS

Our University holds the leading position with respect to teaching and research staff number and qualifications

Researchers employed at the Faculty are frequently promoted and quickly advance in their scientific careers



For many years the Faculty belongs to the group of best Civil Engineering Faculties

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The Faculty is authorized to confer the scientific degrees and conduct the proceedings to grant the scientific title

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Researchers employed at the Faculty are frequently honored with awards by the Minister of Transportation, the Minister of Infrastructure, the Minister of Science and Higher Education

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Position of the highly appreciated partner in the cooperation with economic environment

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Commissioning of the Malopolskie Laboratory of Energy Efficient Housing

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Employees of the Faculty actively participate in the following bodies:

- Central Degree and Title Committee and State Accreditation Board,
  - Polish Academy of Sciences – Committees and Sections, Polish Academy of Learning,
  - trade and professional societies,
  - the National Broadcasting Council,
  - branch associations and societies,
  - editorial boards of Polish and foreign scientific journals,
  - worldwide scientific societies,
  - scientific boards and committees of Polish central administration,
  - scientific committees of serial Polish, European and worldwide scientific conferences,
  - scientific and research consortia,
  - organize important Polish and international scientific conferences,
  - win external funding for research, including the European Union funds.
- 

The Faculty has entered into numerous permanent agreements on research and teaching cooperation, e.g. with Central Mining Institute in Katowice, John Paul II International Airport in Cracow Balice LLC, Sika Poland LLC, Megachemie LLC, Tines PLC, Mota Engil Poland PLC, Municipal City Infrastructure and Transportation Management in Cracow, Galicyjska Building Chamber, The Cracow Magistrate

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Budimex PLC, Geocomp LLC and Robobat Poland LLC, Galicyjska Building Chamber have established and funded grants for students of the Faculty

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Wide cooperation with foreign research centers

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Scientific successes of Faculty students at the University and outside its walls

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#### A C H I E V E M E N T S I N T E A C H I N G A N D L I F E L O N G L E A R N I N G

Leading position at the University with respect to the number of students – about 4000 people altogether during an academic year

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Perfecting the internal system of education quality assurance

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Doctoral studies majoring in Civil Engineering and Transportation

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Professors from foreign research centers conduct the classes for students at the Faculty as part of the Visiting Professor program

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Educational offer broadened to new fields of study and specializations

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Increased efficiency of doctoral (3rd cycle) studies, increased participation of doctoral students in research and scientific activities

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Educational offer expanded and modified, taking into account different forms and levels of education in accordance with labor market requirements

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Improved competitiveness of faculty graduates on the international labor market

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English introduced as language of lecture for Civil Engineering majors

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Improved distance learning methods (e-learning)

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„Internationalization” of the Faculty through participation in international research programs, increased mobility of academic staff and students and increase in the number of students from outside Poland

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Increase in research and teaching potential through investments in laboratories and other facilities of the Faculty

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Targeted subsidies for the education of students

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KAUT accreditation for Civil Engineering (one of only four Faculties in Poland), and for Transportation (the only one)

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Facilitates the entrance on the labor market - the Faculty graduates find employment as engineers very quickly after graduation

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Continuous cooperation of Faculty staff with self government institutions

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#### EXPANSION OF THE RESEARCH AND TEACHING BASE

Małopolskie Laboratory of Energy Efficient Housing, unique in Poland, created and equipped

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Soil Mechanics Laboratory for students created and equipped

---

Building Physics Laboratory for students created and equipped

---

Building Strain and Vibration Analysis Laboratory accredited

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Building Materials and Structures Research Laboratory accredited

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Accession to the Małopolska Passive Building Laboratory program

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Priority investment for the Faculty – erection of a new teaching and laboratory building launched

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Małopolska Regional Operating Program funds acquired to expand modern laboratory base

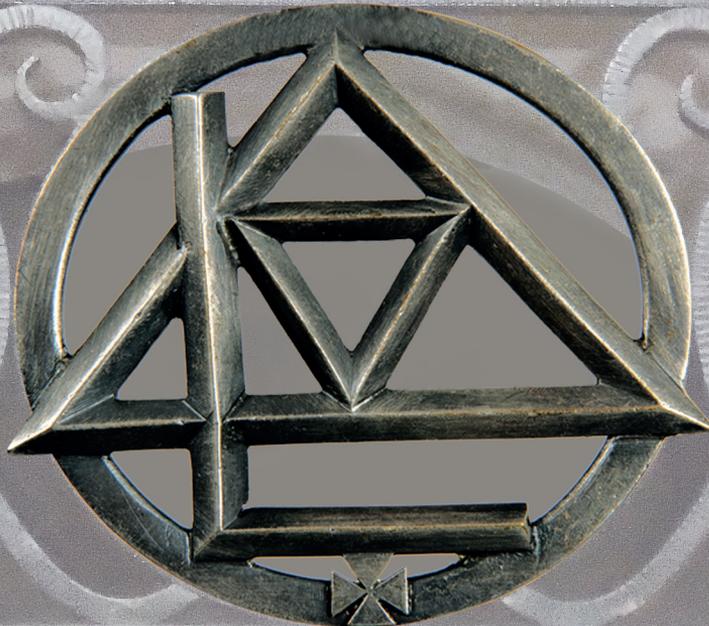
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Auditoriums generally refurbished and re-equipped with audio-visual teaching aids

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New laboratories opened

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**POLSKIE CENTRUM AKREDYTACJI**  
POLISH CENTRE FOR ACCREDITATION



Sygnetariusz EA MLA  
EA MLA Signatory

**CERTYFIKAT AKREDYTACJI**  
**LABORATORIUM BADAWCZEGO**  
ACCREDITATION CERTIFICATE OF TESTING LABORATORY  
**Nr AB 846**

Potwierdza się, że: / This is to confirm that:

**POLITECHNIKA KRAKOWSKA**  
INSTYTUT MECHANIKI BUDOWLI  
LABORATORIUM BADAŃIA ODKSZTAŁCEN I DRGAŃ BUDOWLI  
ul. Warszawska 24, 31-155 Kraków

spełnia wymagania normy PN-EN ISO/IEC 17025:2005  
meets requirements of the PN-EN ISO/IEC 17025:2005 standard

Akredytowana działalność jest określona w Zakresie Akredytacji Nr AB 846  
Accredited activity is defined in the Scope of Accreditation No AB 846

Akredytacja pozostaje w mocy pod warunkiem przestrzegania  
wymagań jednostki akredytującej określonych w kontrakcie Nr AB 846  
This accreditation remains in force provided the Laboratory observes  
the requirements of Accreditation Body defined in the Contract No AB 846

Certyfikat akredytacji ważny do dnia 07.11.2019 r.  
The certificate of accreditation is valid until 07.11.2019

Akredytacji udzielono dnia 08.11.2007 r.  
Accreditation was granted on 08.11.2007



DYREKTOR  
POLSKIEGO CENTRUM AKREDYTACJI

*Lucyna Olborska*  
LUCYNA OLBORSKA

Warszawa, 9 października 2015 roku

**POLSKIE CENTRUM AKREDYTACJI**  
POLISH CENTRE FOR ACCREDITATION



Sygnetariusz EA MLA  
EA MLA Signatory

**CERTYFIKAT AKREDYTACJI**  
**LABORATORIUM BADAWCZEGO**  
ACCREDITATION CERTIFICATE OF TESTING LABORATORY  
**Nr AB 1251**

Potwierdza się, że: / This is to confirm that:

**POLITECHNIKA KRAKOWSKA**  
LABORATORIUM BADAWCZE MATERIAŁÓW  
I KONSTRUKCJI BUDOWLANYCH  
ul. Warszawska 24, 31-155 Kraków

spełnia wymagania normy PN-EN ISO/IEC 17025:2005  
meets requirements of the PN-EN ISO/IEC 17025:2005 standard

Akredytowana działalność jest określona w Zakresie Akredytacji Nr AB 1251  
Accredited activity is defined in the Scope of Accreditation No AB 1251

Akredytacja pozostaje w mocy pod warunkiem przestrzegania  
wymagań jednostki akredytującej określonych w kontrakcie Nr AB 1251  
This accreditation remains in force provided the Laboratory observes  
the requirements of Accreditation Body defined in the Contract No AB 1251

Certyfikat akredytacji ważny do dnia 01.03.2019 r.  
The certificate of accreditation is valid until 01.03.2019

Akredytacji udzielono dnia 02.03.2011 r.  
Accreditation was granted on 02.03.2011



DYREKTOR  
POLSKIEGO CENTRUM AKREDYTACJI

*Eugeniusz W. Roguski*  
EUGENIUSZ W. ROGUSKI

Warszawa, dnia 9 lutego 2015 roku

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## A C H I E V E M E N T S   I N   O R G A N I Z A T I O N

Active participation in Science Festival, Night of the Scientists

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"Open Faculty days" for prospective students

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Organization of the Dean Conventions for the Deans of Civil Engineering and Transportation Faculties

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Publishing of the information periodical "Łądowniec"

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Providing the Faculty building with wireless Internet access points

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Organization of sports and cultural events

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Organization of the graduation ceremony

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Installation of a wireless voting system for the Faculty Council meetings

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Remodeling of the main building to facilitate disabled persons access

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Launching of the Faculty FB page – from the beginning it raises a lot of interest among the students and employees, being appreciated as the source of current information, at the same time it operates as a form of promotion of the Faculty among the candidates for studies

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Inclusion of the Student Research Circles in the works of Chairs and Divisions for Self government and industry

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- Increased activity of Faculty staff and students in addressing current urban problems including the engagement in the preparation of the World Youth Day Transportation Plan in 2016

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- Increased student activity in the organization of conferences, seminars and other didactic events

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Faculty of Civil Engineering  
Cracow University of Technology  
24 Warszawska St., 31-155 Cracow  
tel.: +48 12 628 23 01  
tel./fax: + 48 12 628 2023  
wil@pk.edu.pl  
www.wil.pk.edu.pl  
 Wydział Inżynierii Ładowej PK

Publisher:  
The Dean, Faculty of Civil Engineering  
Cracow University of Technology

Editor:  
Dean's Office

Graphic design:  
Jadwiga Mączka

Photography:  
Jan Zych, Faculty archive

Cracow, 2017