TRADITION AND INNOVATION IN CIVIL ENGINEERING

60 YEARS

OF HIGHER EDUCATION IN THE CONSTRUCTION FIELD IN CLUJ-NAPOCA
Acta Technica Napocensis: Civil Engineering & Architecture
ISSN: 1221-5848
www: http://constructii.utcluj.ro/ActaCivilEng
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Published by UTPRESS
str. Observatorului nr. 34, 400775 Cluj-Napoca
tel. 40-264-401999
E-mail: utpress@biblio.utcluj.ro
fax: 40-264-430408
In this anniversary moment, my first thought goes to the seniority of this faculty, to the teachers that founded the Technical Engineering Faculty of Cluj-Napoca: Tripa, Iacob, Juncan, Negoșă, Mihalcescu, Ilie, Gabriel, Pop Viorel, Coțiu, Bota, Morușca, Beiu, Olariu, Tertea, Bia, Oneș, Băsman, Cătărig, Popa Augustin, Ionescu, Pop G. Ioan, Păcuraru, Alexa. We all need to express our gratitude to them, for those who made us who we are, who build destinies, to those who have left their soul and inspiration within the walls of this faculty. Generation after generation, through a continuous effort, our professors have built a serious and prestigious institution; have formed generations of engineers, which became specialists in civil engineering construction, design or teachers.

In their six decades of existence, the Faculty of Civil Engineering from the Technical University of Cluj-Napoca became an active presence, recognized in higher education in civil engineering at national and international level. The placement area of "Civil Engineering" at the ranking of universities and fields of study, at the highest level (category A) is the proof.

The advantage of studying in a multicultural city like Cluj-Napoca is also reflected in our academic offer, the seven undergraduate specializations and eight MA specializations, in our ability to look towards new horizons, and openens when facing different points of view.

The dynamism of the scientific, technological and economic area, at the beginning of this century is a constant and imminent challenge for educational institutions in which we provide the training for the younger generation, enthusiastic to develop a career. Education is the most important institution of a nation that proves better than anything that time is not lost while passing, but sits quietly in us in layers. Education is a long search for knowledge, to self-discovery, to human personality development towards promoting true values.

Looking towards the future, the Faculty of Civil Engineering is faced with a difficult challenge; the finalization of the Romanian education reform through its connection to international academic standards, by promoting excellence in research and creating lasting connections with the society, on both economical and cultural level.

Dean of Faculty of Civil Engineering
Reader Eng. Nicolae CHIRA, PhD
The tradition of civil engineering education in Cluj-Napoca started in 1920, when, as a consequence of the Government’s decision no. 4206 from the 19th of October, THE SCHOOL OF TECHNICIANS FOR PUBLIC WORKS was established, as institution subordinated to the Ministry of Public Works and Communications. The decision to promote this kind of education was taken by the Romanian Government in order to develop professional skills and education in Romanian after the recent unification of the Romanian state (1st of December 1918).

The education offer of that school was similar to that of other education centers in Romania (Bucharest, Chișinău, Cernăuți), organizing three year courses for technicians in communications and civil engineering.

The first director of that school was Eugen Țilea, engineer and head of Public Works Office in Transylvania.

The School of Technicians for Public Works was an independent institution between 1920 and 1930, and then it was included in the School for Technicians from Cluj.

In 1936 this was permanently moved to Bucharest.

One department of this school remained in Cluj and changed its name of study and name to THE SCHOOL FOR ELECTROMECHANICAL TECHNICIANS (1937-1948).

Between 1945 and 1948, within this school another institution functioned, called THE SCHOOL FOR SITE SUPERVISORS which offered two year courses to high school graduates.

Although, so far we cannot speak of an university studies tradition in civil engineering, the needs of an emerging economy, technical progress, the need to support all these with a coherent plan for urban and rural development, creating a proper infrastructure for industry, agriculture, transport and forestry led to the idea of setting up a school for civil engineers in Cluj.

In order to meet the local need the Ministry of Education was handed in a memorandum detailing the arguments in favour of setting up a Polytechnic Institute in Cluj, on the 12th of February 1947.

Only five years later the Government decided to set up the POLYTECHNIC INSTITUTE OF CLUJ (Government’s Decision No. 2688/1953) which included three faculties: Electrical Engineering, Mechanical Engineering and Civil Engineering).

The difficulties caused by lack of qualified staff or material assets were gradually overcome due to the generous efforts of an enthusiastic team (professors Nicolae Juncan, Vasile Ilea, Igor Tertea, Ferdinand Ghebuz), helped by prestigious professors from Timișoara (academy members professor Dan Mateescu and professor Constantin Avram) and from Bucharest (professor Minahangan).
THE PAST 60 YEARS

1953 “The Polytechnic Institute of Cluj-Napoca” is founded, including the Faculty of Civil Engineering with the specialization Civil, Industrial and Agriculture Constructions; 1970 The specialization of Construction Architects appears as a part of Civil Engineering Faculty; 1971 Within the Civil Engineering Faculty the following specializations appear: - Railway, roads and bridges - long term education; - Building services’ engineering technicians - short term education and evening school education; 1977 “Building Services” specialization with long term education appears; 1992 The Polytechnic Institute changes its name into „The Technical University of Cluj-Napoca”, where the Faculty of Civil Engineering is part of; 1993 Within the Faculty of Civil Engineering the following specializations appear: - “Civil Engineering” - long term education; - “Technical, Economy and Administration College” appears - short term education; 1995 Within the Faculty of Civil Engineering the following specialization appears: “Installations and equipment for atmosphere protection” - long term education; 1997 Within the Faculty of Civil Engineering the following study field appears: - “Economical Engineering” - long term education; 1998 The Faculty of Architecture and Urban Planning appears; 2005 The Faculty of Civil Engineering becomes “The Faculty of Civil Engineering and Building Services”; 2006 Organization at the Faculty of Civil Engineering and Building Services of the domain “Geodesic Engineering” with the specialization “Land Measurement and Real Estate Register”; 2007 Return to the name of “Faculty of Civil Engineering” as a new faculty appears: The Faculty of Building Services; 2008 Organization of a two new specializations within the field of civil engineering: - “Hydrotechnical facilities and constructions”; - “Urban engineering and Regional development”.

This core was soon supplied with competent and valuable staff members such as professors Alexandru Neagu, Mirea Mihăilescu, Eugen Băiuț and the enthusiasm of newly graduates who, year after year, joined the staff as the need for development grew and insured the succession of new generations.

Today, with its 2,533 students enrolled in bachelor and master studies, the Faculty of Civil Engineering is the largest of the faculties in the Technical University of Cluj-Napoca. Its prestigious teaching staff ensured a good reputation for its teaching and research activities in civil engineering and the best proof of this are the 12,500 alumni among who over 600 were overseas students.

This year, the Faculty of Civil Engineering celebrated its 60th birthday, when its alumni, teaching staff, researchers and entrepreneurial partners could see the remarkable development and quality of services this school of civil engineering offers.

Even if 60 years is not that long compared to the age of other higher education institutions, the Faculty of Civil Engineering of Cluj-Napoca has succeeded to ensure itself a good place among renowned higher education schools of civil engineering and the proof of this are its privileged relationships it has with similar universities and faculties from countries such as: France, Italy, Portugal, Belgium, Greece, Hungary and soon.
THE MISSION OF THE FACULTY OF CIVIL ENGINEERING

The mission of the Faculty of Civil Engineering was defined in 2003 - with the occasion of its half century birthday - over three coordinates that define a modern university:

- the highest quality standards in education
- research and development according to international standards
- relationships with society by generating knowledge, educating professional teaching staff, transferring and applying knowledge

The Faculty of Civil Engineering is now the only faculty with tradition in the field of civil engineering in Transylvania: we have 12,357 alumni of who over 600 were overseas students (from Greece, Vietnam, Jordan, Iraq, Israel, Saudi Arabia, Venezuela, Algeria); many of them are now construction engineers, researchers, teachers or business people.

HUMAN RESOURCES

The good name of our faculty is largely due to the prestige of our teaching staff with high professional and scientific competences and extensive experience.

The teaching staff is made out of 122 academic members:

- 14 professors
- 15 senior readers
- 33 readers
- 35 senior teaching assistants
- 11 teaching assistants
- 14 associate professors

Over 60% of our teaching staff has a Ph.D. degree in science.

The teaching staff is organized into four departments:

- The Department of Structural Mechanics (35 members)
- The Department of Civil Engineering and Management (27 members)
- The Department of Structures (31 members)
- The Department of Infrastructures (29 members)

Teaching and administration is ensured by the participation of 9 technicians, laboratory technicians and staff administration.

The teaching activity is sustained and validated by international recognition of the Faculty of Civil Engineering and its privileged relationships with numerous universities from the European Union and the USA. The faculty joined international and national associations: International Association for Bridges and Structural Engineering (IABSE), The Association of European Civil Engineering Faculties (AECEF), Romanian Association of Building Contractors (ARACO) and European Civil Education and Training Association (EUCEET).

EDUCATION OFFER

Studies are organized on three levels:

Bachelor studies (Bachelor of Science) - four year studies
Master’s degree studies (Master of Science) - two year studies
Doctoral studies (Philosophy Degree) - three year studies.

BACHELOR STUDIES

The Faculty of Civil Engineering offers bachelor degree studies with a duration of 4 years (subsidized or paid courses) in following fields:

- The field of CIVIL ENGINEERING, with the following specializations:
  - Civil, industrial and agriculture constructions (CCIA)
  - Civil, industrial and agriculture constructions in English (CCIA in English)
  - Railways, roads and bridges (CFDP)
  - Hydrotechnical facilities and buildings (ACH)
  - Urban engineering and regional development (IUDR)
- The field of ENGINEERING AND MANAGEMENT, with the specialization:
  - Economy engineering in constructions.
- The field of GEODESIC ENGINEERING, with the specialization:
  - Land measurement and real estate register.

MASTER’S DEGREE STUDIES

Our Master’s degree studies are for graduate students with a Bachelor of Science diploma. The studies take two years, are concluded with a dissertation thesis and have the following specializations:

- Structural Engineering
- Pathology and Rehabilitation of Buildings
- Transportation Infrastructure Engineering
- Sustainable Concrete Constructions
- Geotechnics Engineering
- Special Technologies Engineering
- Project Management and Real Estate Evaluation
- Eco-Infrastructures for Transportations and Art Works

DOCTORAL STUDIES

In the field of Civil Engineering the Doctoral Studies take three years under the supervision of 27 Ph.D. coordinators.

INTERNATIONAL PROGRAMS

The students have access to many scholarship exchange programs due to the international agreements between universities (Erasmus, AUF, DBNetz, etc) which our faculty has with prestigious universities across Europe.

Within the Erasmus program, the faculty has agreements with: Technical University of Graz, Université de Liege, University of Southern Denmark, Vita University College, Institut National des Sciences Appliquées des
Every year, approximately 25 students benefit of these scholarships; a great opportunity for future engineers who wish to join internship programs in Europe to improve their experience as well as travel and discover new challenges.

In collaboration with Deutsche Bahn DB Netz Germany "the students internship program and job offers for graduates" was initiated, the interns having the option to be hired at the end of the studies as engineers in Germany.

The faculty offers important, multiple study scholarships merit based scholarships and performance scholarships for deserving students who distinguish themselves by remarkable activities and good results in exams and competitions. For the students, valor is promoted, the creativity is encouraged, open-mindedness is developed. The engagement in significant projects, both of research-design and of construction (on significant construction works), participation in domestic and abroad events (symposiums, conferences), publishing scientific papers, is a good occasion for future engineers to receive valuable informations from the field of civil engineering.

RESOURCES AND UTILITIES

The Faculty of Civil Engineering in Cluj Napoca is endowed with modern education and teaching resources. The 3135 students (from all three preparation levels) study in:

- 8 lecture halls equipped with modern technology
- 6 IT laboratories with up-to-date networks, programming and software design,
- 30 seminar halls and teaching laboratories,
- 6 testing laboratories placed in three buildings
- Students have free access to Internet and other necessary resources for their courses via the Technical University Library and the Faculty of Civil Engineering Library. They also benefit from cafeteria services and accommodation in Observator Complex, situated approximately 20 minutes away from the faculty’s main building.
- The Central Laboratory of Faculty of Civil Engineering was authorized in the year 2008 as a First Degree Laboratory and includes:
  - Laboratory of Concrete, Reinforced Concrete and Prestressed Concrete
  - Laboratory of Building Materials
  - Laboratory of Geotechnical and Foundation soil
  - Research Laboratory in Physics and Protection of Buildings
  - Laboratory of actions in Constructions and Structures
  - Laboratory of Hydraulics

Lyon, Institut National des Sciences Appliquées de Rennes, Université de Nantes, Université Catholique de Lille, Jade Hochschule-Oldenburg, National Technical University of Athens, University of Patras, Universita Di Pisa, Universita Degli Studi di Napoli Federico II, Windesheim University of Applied Science, Cracow University of Technology, Politechnika Białostocka, Czestochowa University of Technology, Lodz University of Technology, Universidade Nova de Lisboa, Instituto Politecnico de Setubal, Universidade do Minho, Slovak University of Technology, Universidad de Coruna, Istanbul Kultur University, Budapest University of Technology and Economics, University of Debrecen.
The Faculty of Civil Engineering of Cluj-Napoca has always promoted high quality education and, because of that, it has managed to maintain a place among the world’s elite faculties of civil engineering.

In any field, but especially in higher education, quality of work must be seen in the results. If the analyzation of the results shows that the path chosen was the correct one, the remaining thing to do besides the enjoyment of success, is to establish and achieve even higher objectives.

Determination, seriousness and courage are attributes of a team, the Faculty of Civil Engineering team, which has always understood that the joy of success is not the end of a road but an open door to higher ideals.

Faculty of Civil Engineering participated over the years at various important competitions including: “World Championship in Spaghetti Bridge Building”, “Concrete Canoe - Beton Kenu” and “Seismic Design Competition”.

“RECCS-World Championship in Spaghetti Bridge Building” is a global competition organized by the Faculty of Mechanical Engineering and Safety Technology at Óbuda University in Budapest, Hungary. The main theme of the competition is represented by designing and constructing bridge structures with certain required characteristics. The material used for building is pasta. The most important analyzed features are: performance of the structure, aesthetic qualities and innovation.

In 2012, the participating team of the Civil Engineering Faculty in RECCS contest had a remarkable evolution over the previous year and became the champion of the competition, bringing home the First Prize Award.

The participation of the students team in IHEEp Winnipeg Conference, Canada, in 2011, brought to the Civil Engineering Faculty the first place.
The student teams had the support from the dean, senior reader Nicolae Chira, and also guidance by other professors such as: professor Pavel Alexa, professor Doina Verdes, assistant professors Ovidiu Prodan, Szentesi Szende and Bianca Pârv. Students filed sustained efforts during several months of hard work in building several balsa wood models. Balsa wood is a light material but with high resistance. The models were tested on a shaking table in the Earthquake Laboratory of Faculty of Civil Engineering.

The teams proudly represented the Faculty of Civil Engineering of Cluj Napoca, winning important awards every year:

- in 2011, at San Diego, California: „Egor Popov – Award for Structural Innovation“
- in 2012, at Memphis, Tennessee: „Degenkolb – Award for Structural Innovation“

“Seismic Design Competition (SDC)” is an international competition hosted by Earthquake Engineering Research Institute (EERI) in USA. The competition consists in designing and constructing a balsa wood model of an office building, which must resist three simulated earthquakes generated by the shaking table. The most important criteria is the model to resist the earthquakes. In this competition, The Faculty of Construction participated three consecutive years: 2011, 2012, 2013.

In 2013 the Faculty of Civil Engineering of Cluj-Napoca student teams won the third place, next to prestigious universities such as UCLA, Oregon State University surpassing California Polytechnic University, Iowa State University, Cal Poly San Luis Obispo, The University of Memphis and other prestigious universities known all over the world.
The Student Scientific Competition of Strength of Materials "C. C. Teodorescu" is organized annually at one of the technical universities in Romania. This year the competition was hosted by the Faculty of Civil Engineering of Technical University of Cluj-Napoca, the young Transylvanian school of buildings which celebrates 60 years of existence (1953-2013).

The scientific student national confrontation, which became a tradition, positions each technical university in a hierarchy of values. The students from Cluj, participants in the field of "Construction", performed very well throughout the years at this basic engineering discipline, strength of materials, obtaining the following awards in the last 3 years: in 2011 the national first prize and two mentions, in 2012 and in 2013 the national first prize, the second one and one mention.

"Concret Canoe - Beton Kenu" was an international competition organized for students held at Ráckeve, Hungary, in the summer of 2013. The Faculty of Civil Engineering chose to participate in the competition with a team of 10 students having as supervisor the professor Mircea Callin. The challenge was to build a concrete canoe, which meant hours and days of training, advanced calculations and physical labour also. The entire activity of preparing for the competition was held in the Faculty of Civil Engineering laboratories. Determination and seriousness of the entire team was the key to success. The team participating in the competition represented with honour our faculty and they brought home the special award.

The Faculty of Civil Engineering also organizes student competitions, the most popular being the "Structure of the Future" competition, Engineering and Innovation, organized by Department of Structures. This competition is the first one of its kind, organized for students, graduated students and also PhD students. How does the future look like? How will the civil, industrial structures, bridges or dams look like in 50 years? Students are asked to provide the structure of the future, as they imagine it, with no constraints associated with number of stores, area, location, construction materials or destination. The analyzed characteristics of the proposed structures are: originality, innovation, power of imagination, the capacity to systematize, and also the ability to solve some of the socio-economic situations, such as population expansion and visible damage to the environment. Students tried to think of the future and to apply general knowledge obtained in faculty.

The initiative to organize this contest belongs to professor Kiss Zoltan and lecturer Camelia Negruți.
The Faculty also organizes fairs, conferences, scientific meetings and presentations, which all lead to a better understanding of the phenomena that occur in the field of civil engineering. Some of these were held for the first time in Romania:

- **Construct Info** – presentations of the most important construction companies, in order to facilitate the communication between them and the students, presentations of new materials, technologies and software design etc.

- **National Scientific Communication Session for Students** – was organized for the first time since 1989 at the Faculty of Civil Engineering in Cluj-Napoca – now at edition no. XIII. The event includes the presentations of the student’s scientific articles from all universities in the country and abroad.

- **The first "International Conference for PhD students in Civil Engineering" in Romania**
The Deans of the Civil Engineering Faculty
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<tr>
<th>Name</th>
<th>Institution</th>
<th>Date</th>
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<tr>
<td>ALEX HORIA BĂRBAT</td>
<td>Universitatea Politehnică Catalunia, Barcelona, Spania</td>
<td>7 noiembrie 2013</td>
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<tr>
<td>VICTOR GIONCU</td>
<td>Universitatea Politehnica' Timişoara</td>
<td>16 Noiembrie 2010</td>
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<tr>
<td>IGOR TERTEA</td>
<td>Universitatea Tehnică din Cluj-Napoca</td>
<td>19 mai 2008</td>
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<td>DUMITRU MARUSCEAC</td>
<td>Universitatea Tehnică din Cluj-Napoca</td>
<td>14 decembrie 2007</td>
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<td>LAURIE F. BOSWELL</td>
<td>City University of London United Kingdom</td>
<td>11 septembrie 2006</td>
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<td>DUBINĂ DAN</td>
<td>Universitatea Politehnica' Timişoara</td>
<td>30 martie 2005</td>
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<tr>
<td>MIHĂILESCU MIRCEA</td>
<td>Universitatea Tehnică din Cluj-Napoca</td>
<td>15 mai 2002</td>
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<tr>
<td>IOANNIS VAYAS</td>
<td>Universitatea Tehnica din Atena, Grecia</td>
<td>17 noiembrie 1997</td>
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<tr>
<td>NEGOIȚĂ ALEXANDRU</td>
<td>Universitatea Tehnică &quot;Gheorghe Asachi&quot; Iași</td>
<td>4 aprilie 1997</td>
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<tr>
<td>SOARE V. MIRCEA</td>
<td>Universitatea Tehnică de Construcţii Bucureşti,</td>
<td>17 martie 1997</td>
</tr>
<tr>
<td>MATEESCU DAN</td>
<td>Universitatea Tehnică, Timişoara</td>
<td>28 aprilie 1995</td>
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Doctori Honoris causa in the Civil Engineering field of our university
tradition and innovation
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