

Combining Education and Research in Engineering – the Budapest experience



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On our main features

- Location "quite in the heart of Europe"
- Center of excellence type of education, but mass education is not avoidable, either
- Research University, country leading in engineering science
- International rankings: falling in the uppermost 2–3%



BME in Figures

1782 Institutum Geometricum–Hydrotechnicum

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1949 – 2000 Technical University of Budapest

2000 – Budapest University of Technology and Economics

- **8 Faculties**
- **78 Departments**

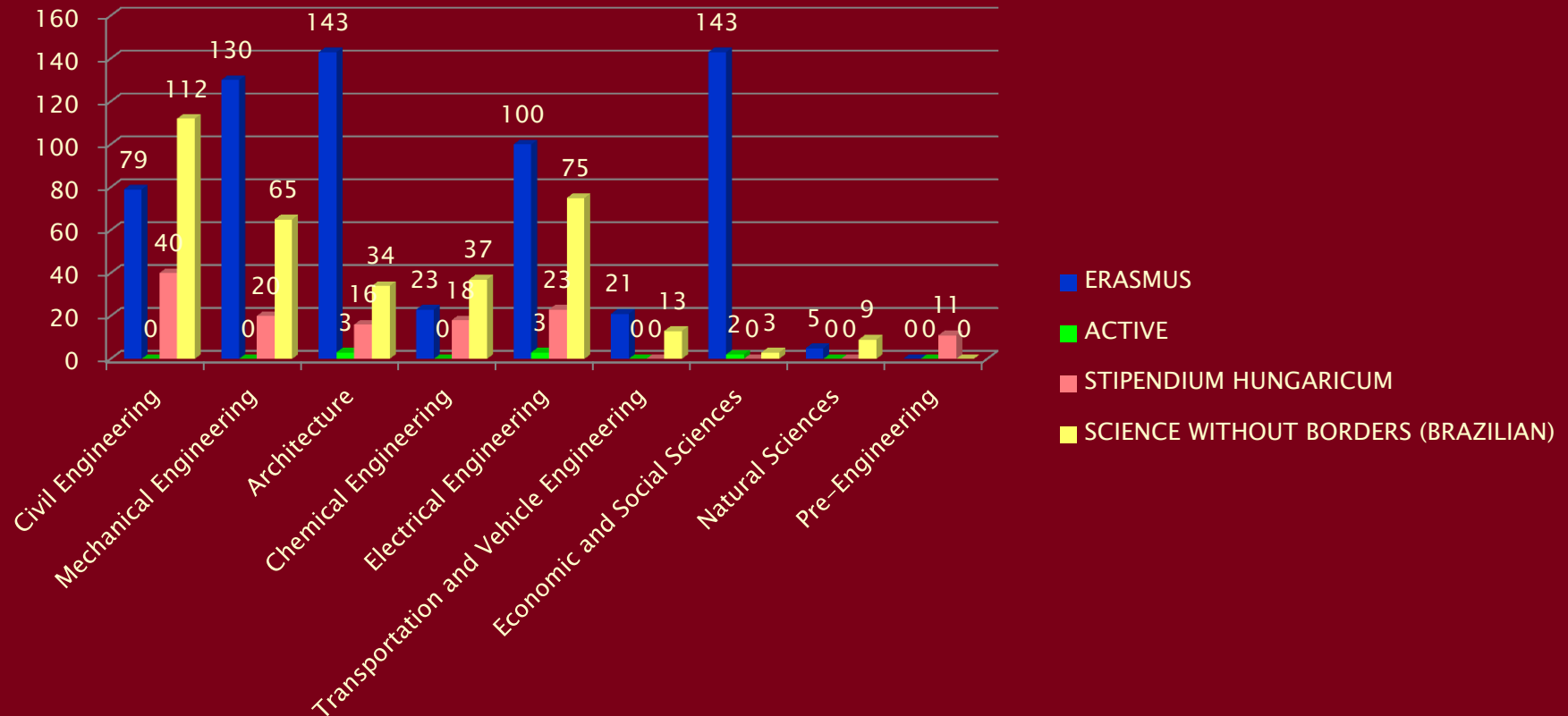
Faculties:

- **Civil Engineering** (1782)
- **Mechanical Engineering** (1871)
- **Architecture** (1873)
- **Chemical and Biotechnology** (1873)
- **Electrical Engineering and Informatics** (1949)
- **Transportation Engineering** (1951)
- **Natural Sciences** (1998)
- **Economic and Social Sciences** (1998)

- **24,000 Students (BSc, MSc, PhD)**
- **1,500 Academic staff members**

International Students at BME

Incoming international students in 2015





Let us turn to the topic proper: Education and Research in Engineering

- **University of Technology**
 - Education and lab-, field and computer-intensive research have to go in general hand in hand
- **In-house research and industry-based R&D**
 - Exploratory research
 - Applied research and innovation

Education and Research In what age to start?

- **Our new initiation in 2015: Children University**
 - Summer school for 7–10 and 11–14 years old primary school children
 - Week–long education, including lectures, lab and project work in teams, with final presentation
 - In 2015 2x300 children, in 2016 2x400 children
 - Own website, 2017 is already fully booked up



Look at those open minded faces!



Next level: Secondary school age

- **Looking for future students talented to research**
 - University Talency Council in key role
 - Cooperation with nearly thirty secondary schools
 - Introductory lectures to natural science, lab visits
 - Recruiting people for engineering, talented doing research in engineering science

When at University: the offered framework is the „Scientific Student Circle”

- SSCs with nearly 60 years history in the Hungarian Higher Education – a so-called Hungaricum
- Talency care
- Fitting to the Bologna system
- Do we need SSCs at BSc level? Yes, we do.
- Can we handle BSc and MSc jointly in that? Yes we can.

Scientific Student Circles at MSc level

- **Enhanced involvement in ongoing research projects**
 - More and more individual research tasks
 - Supervision with more and more freedom
- **Scientific Student Conference once a year in a great number of sessions, with nearly thousand students and 600 presentations a day**
- **The best ones go to national level and publish paper**

Special event: bridge design and construction competition





From Scientific Student Circles to PhD studies

- SSCs are the primary pool to recruit PhD students
- Capacity building for academic staff (both teaching and research) and for R&D&I companies
- Research achievements converted to teaching material (both classical and e-learning type)
- That's how all this works, hoping that one day the kids of our doctoral students come also to our Children University, making all the process cyclic







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