Faculty of Electronics, Telecommunications and Information Technology

Mission: “To contribute by advanced research to the knowledge development in electronics, telecommunications and information technology, as well as to train specialists able to develop, design, implement, and exploit electronics and telecommunications systems, with applications in the most various industrial, research, and domestic areas”
Outline

• Historical background
• Facts and figures
• B.Sc. studies
• M.Sc. studies
• Ph.D. studies
• Professional extracurricular activities of the students
• Alumni and employment
1977 - Electronics and Telecommunications profile is initiated at the Faculty of Electrical Engineering

1990 – The Faculty of Electronics and Telecommunications is founded with two specializations:
  - Applied Electronics
  - Telecommunications

1994 - Post graduate studies are initiated

1999 – An English teaching line is launched for undergraduate studies (5 years)

2005 – The Faculty is renamed Faculty of Electronics, Telecommunications and Information Technology

2005 – The Bologna process is adopted

2009 – New specialization: Economic Engineering in Electrical, Electronics and Energetics Domain
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• Romania has 112 universities of which 56 are public and 56 are private.

• According to the national classification exercise (2011), the Ministry categorized TUCN into the first group of “teaching and advanced research university”, which includes twelve universities.

• The Technical University of Cluj - Napoca is a leading higher education institution in the technical field, in Transylvania as well as in Romania.
Local and regional context

- Leading technical universities having electronics and telecommunications faculties
- Other universities having electronics and/or telecommunications study programs

Cluj-Napoca
Timisoara
Iasi
Bucharest
UTCN comprises two main sites in Cluj-Napoca and one in Baia Mare as well as regional satellites located in neighbouring counties, i.e., Alba-Iulia, Bistrița, Satu-Mare and Zalău.
Number of B.Sc. students (Cluj-Napoca)

Faculty (Cluj-Napoca)
- Architecture and Urban Planning: 777
- Building Services: 596
- **Electronics, Telecommunications and Information Technology**: 1217
- Automation and Computer Science: 2085
- Electrical Engineering: 978
- Mechanical Engineering: 1409
- Machine Building: 1851
- Materials and Environmental Engineering: 473
- Civil Engineering: 1869
Number of M.Sc. students (Cluj-Napoca)

<table>
<thead>
<tr>
<th>Faculty (Cluj-Napoca)</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Services</td>
<td>106</td>
</tr>
<tr>
<td><strong>Electronics, Telecommunications and Information Technology</strong></td>
<td><strong>315</strong></td>
</tr>
<tr>
<td>Automation and Computer Science</td>
<td>576</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>315</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>394</td>
</tr>
<tr>
<td>Machine Building</td>
<td>681</td>
</tr>
<tr>
<td>Materials and Environmental Engineering</td>
<td>234</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>699</td>
</tr>
</tbody>
</table>
• Study programs accredited and classified in the highest “A” category by the National Ministry of Education in 2011

• Best faculty in Romania according to a national survey organized in 2006 by a prestigious Romanian financial and economics magazine
International collaborations

[Map of Europe with marked locations]
Structure

- Bases of Electronics Department
- Communications Department
- Applied Electronics Department

The teaching process is also supported by other structures of the university: Mathematics, Electrotechnics and Measurement, Physics, Foreign Languages and Communications, Management, Marketing, Accountancy, Sport.
Complete educational offer

- Licence-Master-Doctorate (L-M-D)

- **B.Sc**
  - 4 years

- **M.Sc.**
  - 2 years

- **Ph.D.**
  - 3 years
• Historical background
• Facts and figures
• B.Sc. studies
• M.Sc. studies
• Ph.D. studies
• Professional extracurricular activities of the students
• Alumni and employment
Study programs – B.Sc. degree

• Applied Electronics – in Romanian and in English

• Telecommunications Technologies and Systems – in Romanian and in English

• Economic Engineering in Electrical, Electronic and Energetic Domain – in Romanian
Study programs – B.Sc.

1st, 2nd years
- Electronics and Telecommunications Engineering
  - Applied Electronics
  - Telecommunications Technologies and Systems
- Economic Engineering in Electrical, Electronics and Energetic Domain
  - Economic Engineering in Electrical, Electronics and Energetic Domain

3rd, 4th years
## Curricula structure – B.Sc.

<table>
<thead>
<tr>
<th>Types of courses</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fundamental</strong></td>
<td>574</td>
</tr>
<tr>
<td>(Mathematics, Physics, Computers Programming)</td>
<td></td>
</tr>
<tr>
<td><strong>Domain</strong></td>
<td>1598</td>
</tr>
<tr>
<td>(Fundamental Electronic Circuits, Integrated Circuits, Microprocessors, Television Engineering)</td>
<td></td>
</tr>
<tr>
<td><strong>Speciality</strong></td>
<td>798</td>
</tr>
<tr>
<td>(Power Electronics, Sensors and Transducers, Microcontrollers, Digital Image Processing, Mobile Communications, Internet Protocols)</td>
<td></td>
</tr>
<tr>
<td><strong>Complementary</strong></td>
<td>182</td>
</tr>
<tr>
<td>(Foreign languages, Sport)</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 3152

10% are optional courses
Students dynamics – B.Sc.

Number of students

Admission (a) and Graduation (g) years

- a-2005: 330
- g-2009: 172
- a-2006: 263
- g-2010: 187
- a-2007: 287
- g-2011: 198
- a-2008: 294
- g-2012: 165
- a-2009: 283
- g-2013: 166
- a-2010: 307
- g-2014: 307
- a-2011: 291
- g-2015: 332
- a-2012: 332
- g-2016: 386
- a-2013: 386
- g-2017: 386

Admission
Graduation
Where do our B.Sc. students come from?

No. of B.Sc. students in the first year (2013-2014)
Practical Training—B.Sc

- at least 200 hours, 6 – 8 weeks
- usually after the 3rd year of study, during the summer holidays (July, August, September)
- standard agreement for practical training between TUCN (faculty) – company - student

- the faculty
  - promote the companies offers for practical training
  - supports the company in all activities related to the students' practice

- the companies
  - select the students
  - assure a tutor for the students
  - issue a certificate for the students
Diploma thesis – B.Sc.

- diploma thesis defense – 2nd week of July
  - presentation
  - practical demonstration
- allocation of the topics for diploma thesis – no later than the beginning of 4th year of study (October, November)
- for diploma topics proposed by companies
  - two supervisors (one from company, one from faculty)
  - the student can work in the company, especially in the 4th year, 2nd semester (March – May)
• Performances evaluation of Modified Dijkstra and Floyd-Warshall algorithms implemented in OpenFlow
• 3D Virtual Reality Based Maps used for Indoor Navigation
• Comparison between theoretic value and measured value of average mutual information per bit in a LTE system implemented on NI USRP
• Evaluation of a fuzzy logic based model for QoS support implemented in a unified radio access network
• Development of a multimedia-type portable device with GPS
• Electronic board and acquisition system for motorcycle
• Specific electric measurements related to smart textiles and applications
• H.O.T.T.I.E. - Heater Operator with Telephone Text Interface
• Adaptive Routing using Dijkstra’s modified algorithm for OpenFlow
• PRADO - Platform for managing the process of choosing the optional courses
• Implementation of acoustical effects on TMS320VC5505 eZDSP USB stick platform
• Real-Time 3D imaging in an FPGA system
• Design and simulation of a communication protocol for wireless sensor networks to optimize energy consumption and network lifetime
• Adaptive combination of linear NLMS filters and its application in acoustic system identification
• Designing and implementing a remote controlled quadcopter
• Historical background
• Facts and figures
• B.Sc. studies
• M.Sc. studies
• Ph.D. studies
• Professional extracurricular activities of the students
• Alumni and employment
• Integrated Circuits and Systems
• Electronics Engineering
• Telecommunications
• Multimedia Technologies
• Integrated Communication Systems with Special Applications
• Signals and Images Processing (double degree)
Students dynamics – M.Sc.

Number of students

Admission (a) and Graduation (g) years

- a-2009 g-2011: 161 98
- a-2010 g-2012: 166 101
- a-2011 g-2013: 162 86
- a-2012 g-2014: 156
- a-2013 g-2015: 137

Legend:
- Admission
- Graduation
• dissertation defense – 2nd week of July
  ⊗ presentation ⊗ practical demonstration
• allocation of the topics – usually during the 1st year of study
• dissertation related activities in the curriculum
  ▪ R & D: 3h/week - 1st, 2nd, 3rd semester
  ▪ R & D: 6h/week - 4th semester
  ▪ preparation of dissertation - 6h/week - 4th semester
• dissertation for topics proposed by companies
  ▪ two supervisors (company + faculty)
  ▪ the student can work in the company, especially in the 4th semester (March – May)
Where do our M.Sc. students come from?

- ETTI graduates: 78%
- B.Sc. graduates of other faculties from TUCN: 19%
- B.Sc. graduates of other universities: 3%
• Historical background
• Facts and figures
• B.Sc. studies
• M.Sc. studies
• Ph.D. studies
• Professional extracurricular activities of the students
• Alumni and employment
Ph.D studies

- Number of Ph.D. Advisors: 14
- Domain: Electronics and Telecommunications Engineering

2008-2013, the Ph.D. programs were also supported by EU projects, co-funded by the ESF (European Social Fund) through the SOP-HRD (Sectorial Operational Program Human Resources Development) 2007-2013
Outline

• Historical background
• Facts and figures
• B.Sc. studies
• M.Sc. studies
• Ph.D. studies
• Professional extracurricular activities of the students
• Alumni and employment
Extracurricular activities of our students

- Participation in national and international student contests
• Participation with papers at our symposium and in our journals
Extracurricular activities of our students

- Attendance to seminars organized by companies
Student prizes and awards

- Tornea Olga (Ph.D) – gold medal at the Pro Invent 2013 patent salon
- Lodin Alexandru (M.Sc.) – second prize at the Image Processing and Analysis student competition - 2013
- Sergiu Stanculescu (B.Sc.) – second prize at the student national electronics and telecommunications contest “Tudor Tanasescu” – 2013
- Raducan Cristian (anul IV EA) – third prize the student national electronics and telecommunications contest “Tudor Tanasescu” – 2013
- Salajan Tomina and Martari Paul (M.Sc.) – first and second prize at student national electronics and telecommunications contest “Tudor Tanasescu” – 2012
- Turdean Mihai (B.Sc.) - second prize at student national electronics and telecommunications contest “Tudor Tanasescu” – 2012
- Sergiu Stanculescu and Blenyesi Balazs (B.Sc.) – best presentation award at the International Student Digilent Design Contest- 2012
- Mihai Băncișor, Ciprian Cărbonaru (B.Sc.) – fourth prize at the International Student Digilent Contest- 2011
• Historical background
• Facts and figures
• B.Sc. studies
• M.Sc. studies
• Ph.D. studies
• Professional extracurricular activities of the students
• Alumni and employment
Companies that employ our graduates / offer practical training for our students
Companies that employ our graduates

2011 graduates
Companies that employ our graduates

older graduates