



## GEODETIC EDUCATION AT THE "POLITEHNICA" UNIVERSITY OF TIMISOARA - ROMANIA

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## TOPICS

- 1. GENERAL CONTEXT OF ROMANIAN CADASTRE  
which generates the need for an increasing number of specialists
- ↓
- 2. SURVEYING AND CADASTRE EDUCATION IN ROMANIA  
an increasing number of universities require for surveying programs
- ↓
- 3. EDUCATION AT "POLITEHNICA" UNIVERSITY OF TIMISOARA  
according to national requirements and general EU trends
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- 4. PROGRAM OF SURVEYING AND CADASTRE IN TIMISOARA  
ascending evolution due to inner national and local conditions

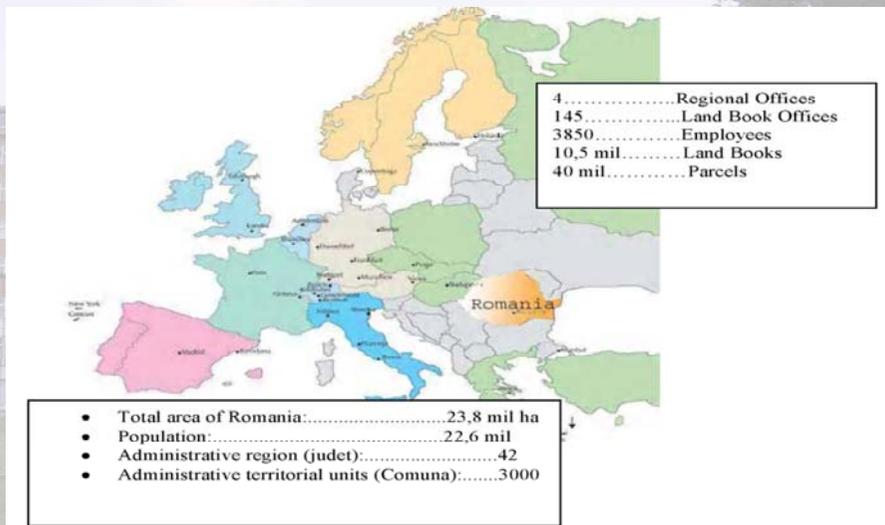
## SPECIFIC CADASTRAL OBJECTIVES

- RESTORATION OF RIGHTS TO REAL PROPERTY
- PRIVATIZATION OF AGRICULTURAL LAND – TOGETHER WITH REFORMS FOR DEVELOPMENT OF RURAL AREAS
- PRIVATIZATION OF URBAN LAND
- SCHEMES TO IMPROVE INSUFFICIENT INFRASTRUCTURE
- DEVELOPMENT OF LOCAL DEMOCRACY
- STIMULATION OF NEW INVESTMENTS
- SUPPLYING CADASTRAL DATA TO DIFFERENT BENEFICIARY

↓  
and above all

IMPLEMENTATION OF GENERAL AND MULTIPURPOSE  
CADASTRE IN THE WHOLE TERRITORY OF THE COUNTRY

## NATIONAL CONTEXT-SUPPORT FOR SURVEYING EDUCATION



## SURVEYING AND CADASTRE EDUCATION IN ROMANIA

**MAIN PARTICULARITIES OF THE SYSTEM:**  
2005/2006 RO ADHERED TO THE BOLOGNA SYSTEM

Bachelor program      Master Program      PhD Program

- follows a traditional European curriculum
- 4 years program – operates with credit system (ECTS): 240 credits
- Curriculum consists of compulsory subjects, optional and elective subjects
- Evaluation: 4 exams, 4 colloquiums
- Diploma – leads to B.Sc. Degree granted

### Master Program

- Starting with 2009/2010 – Bologna system
- Consists of :
  - 14 hours /week
  - 4 examinations /semester
  - Dissertation → M. Sc. degree granted

- **PhD program**

Faculty of Geodesy - Bucharest

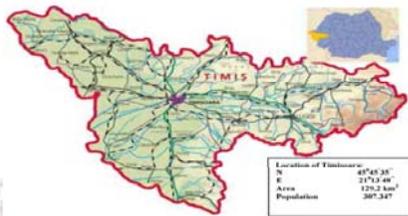
- The Romanian Agency for Quality Assurance in Higher Education and the Governmental Accreditation Committee evaluate periodically all programs

## GEODETIC EDUCATIONAL TRAINING IN ROMANIA



❖ The program taught in Romanian Universities follows a traditional European curriculum and lead to the Dipl. Eng. Degree.

## EDUCATION IN THE "POLITEHNICA" UNIVERSITY OF TIMISOARA



Timisoara - important academic city with strong economical and cultural tradition

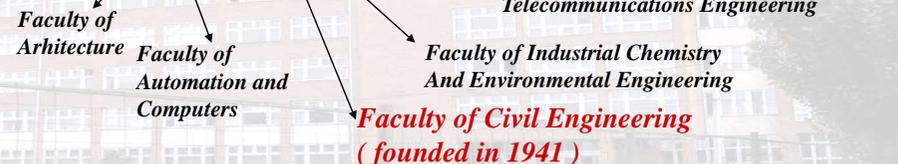
✓the "Politehnica" University of Timisoara is one of the largest, well-known technical universities in Central and Eastern Europe.

✓the "Politehnica" University of Timisoara has 10 faculties and several independent departments delivering the academic programs which are modern, relevant, intellectually stimulating and represent the highest quality in their respective disciplines.

✓the branch of Surveying and Cadastre from the faculty of civil Engineering offers full-time degree programs in Romanian language only.



founded in 1920

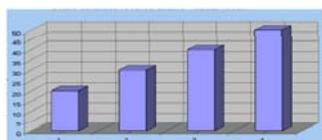


### DEPARTMENTS

Steel Structures and Structural Mechanics  
Civil Engineering  
Roads, Foundations and Cadastre(1991)  
Plumbing

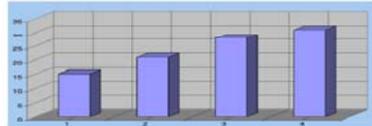
## PROGRAM OF SURVEYING AND CADASTRE IN THE "POLITEHNICA" UNIVERSITY OF TIMISOARA

PROGRAM FOUNDED IN 1991 - *accredited specialization*



1 - period of time 1991-1995  
2 - period of time 1996-2000  
3 - period of time 2001-2004  
4 - period of time 2004-2008

number of places



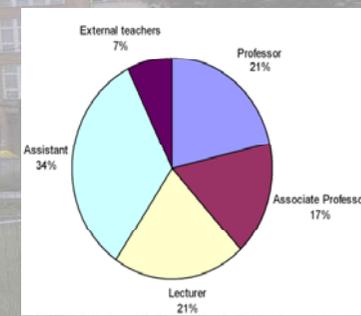
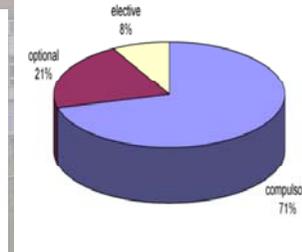
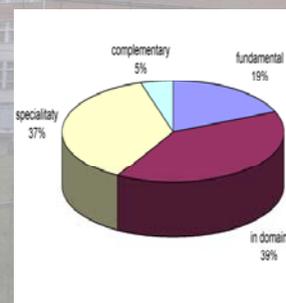
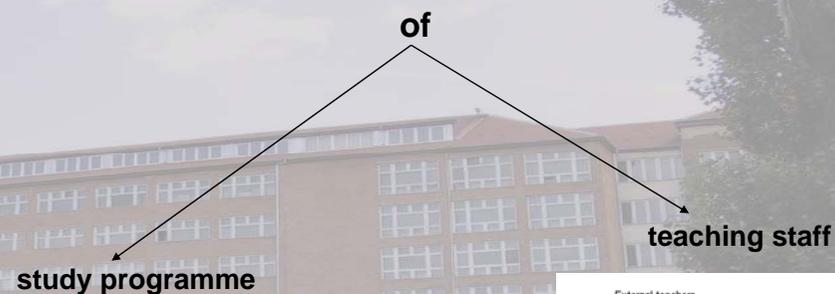
1 - year 1996  
2 - year 2000  
3 - year 2004  
4 - year 2008

number of graduates

The consolidation strategy of the specialization covers the following objectives:

- ✓Continuous development of the curriculum and syllabuses, in conformity with the evolution of the techniques in the domain of Geodesy, and in correlation with similar Romanian and European Union institutes;
- ✓ PhD development studies for the teaching staff and specialized training for external professors;
- ✓Development of some current research fields in cadastre such as: informatization of the land register, land information systems, GIS, satellite technologies.

## DIAGRAM





CURRICULUM STRUCTURE  
CYCLE I / Undergraduate Studies

YEAR I

1<sup>st</sup> semester

No	Discipline	Total hours	CR	Exam.	No	Discipline	Total hours	CR	Exam.
1.	Mathematical analysis	4	4	E	1.	Special Mathematics	4	4	E
2.	Algebra and Geometry	4	4	E	2.	Physics	4	5	E
3.	Architecture Elements	2	2	D	3.	Computing Graphics and Drawing	5	5	D
4.	Topography 1	4	5	E	4.	Geodetic Instruments and Measurement Methods	5	5	E
5.	Computer Programming	4	4	D	5.	Geomorphology and General Geology	4	4	E
6.	General Chemistry	3	3	E	6.	Environmental Protection	2	2	D
7.	Descriptive Geometry	3	3	D	7.	Sports 2	1	1	D
8.	Sports 1	1	1	D	8.	Foreign Languages 2	2	2	D
9.	Foreign Languages 1	2	2	D	9.	Practical Activity 2	2		C
10.	Practical Activity 1		2	C					
<b>TOTAL</b>		<b>27</b>	<b>30</b>	<b>4E+5 D+1C</b>	<b>TOTAL</b>		<b>27</b>	<b>30</b>	<b>4E+4D+1C</b>



YEAR II

3<sup>rd</sup> semester

No	Discipline	Total hours	C	Exam.	No	Discipline	Total hours	CR	Exam.
1.	Numerical methods	4	5	E	1.	Geodetic Networks	4	4	E
2.	Topography 2	4	5	E	2.	Measurement Adjustment 2	5	6	E
3.	Measurement Adjustment 1	5	5	E	3.	Hydrotechnical Engineering	3	3	D
4.	General Course of Civil Engineering	4	3	D	4.	Astronomy	3	4	E
5.	Geometrical Basis of Photogrammetry	3	3	D	5.	Topographic drawing	3	3	D
6.	General Course of Roads	4	4	E	6.	Topographic Measurements for Infrastructure	4	4	E
7.	Socio-Humanistic Science (Civilization)	2	2	D	7.	Economics	4	3	D
8.	Sports 3	1	1	D	8.	Sports 4	1	1	D
9.	Practical Activity 3		2	C	9.	Practical activity 4		2	C
<b>TOTAL</b>		<b>27</b>	<b>30</b>	<b>4E+4D+1C</b>	<b>TOTAL</b>		<b>27</b>	<b>30</b>	<b>4E+4D+1C</b>

4<sup>th</sup> semester



YEAR III

5<sup>th</sup> semester

No	Discipline	Total hours	CR	Exam	No	Discipline	Total hours	CR	Exam.
1.	Geodesy 1	5	6	E	1.	Geodesy 2	5	6	E
2.	Cartography 1	5	5	E	2.	Cartography 2	5	5	E
3.	Electronic Measurements of Distances 1	4	4	E	3.	Electronic Measurements of Distances 2	4	4	E
4.	Landscape Development and Urbanism	4	4	D	4.	Cadastre 2	4	5	E
5.	Special Land Survey 1	2	2	D	5.	Special Land Survey 2	3	3	D
6.	Cadastre 1	4	5	E	6.	Photogrammetry 1	3	3	D
7.	Marketing and legislation	2	2	D	7.	Management	2	2	D
8.	Practical activity 5		2	C	8.	Practical activity 5		2	C
<b>TOTAL</b>		<b>26</b>	<b>30</b>	<b>4E+3 D+1C</b>	<b>TOTAL</b>		<b>26</b>	<b>30</b>	<b>4E+3 D+1C</b>

6<sup>th</sup> semester



YEAR IV

7<sup>th</sup> semester

No.	Discipline	Total hours	C	Exam.	No.	Discipline	Total hours	CR	Exam.
1.	Cadastral and land law	5	5	E	1.	Satellite Geodesy	5,5	3	E
2.	Engineering Topography 1	5	6	E	2.	GIS	2	2	E
3.	Photogrammetry 2	4	4	E	3.	Engineering Topography 2	4	3	E
4.	Land Planning and Ecology	4	5	E	4.	Terrain and Construction Behaviour Tracking	3,5	3	E
5.	Management of Geodetic Works	4	5	D	5.	Automation of geodetic Works	3	2	D
6.	Designing Geodetic Networks	3	4	D	6.	Assessment of Immovable	2	2	D
7.	Communication	1	1	D	7.	Diploma work		15	E
<b>TOTAL</b>		<b>26</b>	<b>30</b>	<b>4E+3D</b>	<b>TOTAL</b>		<b>26</b>	<b>30</b>	<b>5E+2D</b>

8<sup>th</sup> semester (7 weeks teaching + 7 weeks diploma preparation)

Legend:  
CR-credits  
E-exam

D-distributive evaluation  
C-colloquium/oral examination

## Evolution and perspectives

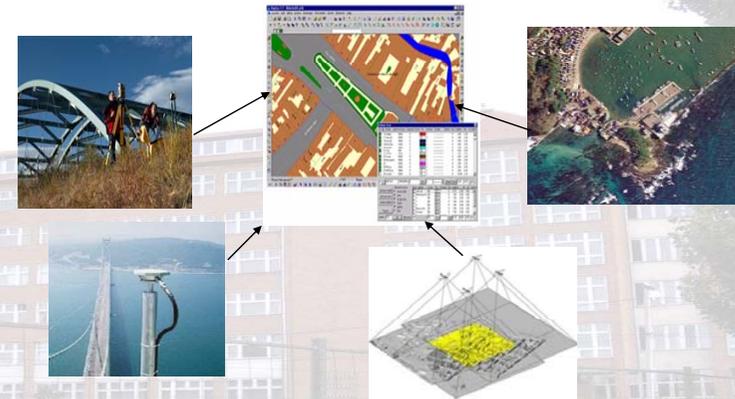
- SURVEYING AND CADASTRE PROGRAM**

↓  
**INTERDISCIPLINARY SPECIALIZATION –**

capable to train competent specialists and provide efficient solutions for design, realization and exploitation of works in the field of geodesy for different purposes:

- surveying engineering works
- cadastral works
- systematization
- urbanism
- GIS, etc.

## SURVEYING DIMENSION



➤ Lately, the methods, technical tools and principles in organization Surveying work changed a lot due to the progress in informatics and technology specific to geodetic work and also due to the inner conditions of the Romanian society.

### CHALLENGE FOR FUTURE GRADUATES



## GENERAL CONCLUSIONS

- In the last period there have been significant changes in Geodesy

*which brought*

- major technological developments
- demand for new products and services

*created*

growing demand from government, local authorities and enterprises for specialists with new knowledge and skills

- The information age has changed the surveying and mapping professions
- Future surveying and mapping graduates should be able to move from technical specialists roles to participants in solution of societal problems – in many cases, professional surveyors no longer provide services directly to society **BUT** their results are passed on to other professions for final interpretation, analysis and presentation to the public (architects, engineers)

## GENERAL CONCLUSIONS

- The educational emphasis must shift from dependence on state-of the art instrumentation and equipment specific training to the appropriate application and analysis of the use of these changing technologies;
- Students and graduates should be encouraged to develop a practical background and to mix educational experience with the practical experience;
- Another truth is, that knowledge and professional competence is no longer given once and for all – it must be maintained and extended through a lifelong process of learning;
- So, the continuing education after graduation is as important as proper curriculum on the school and university levels