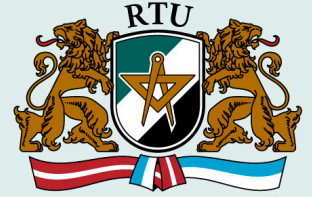


Capacity building in the field of GNSS at the Riga Technical University

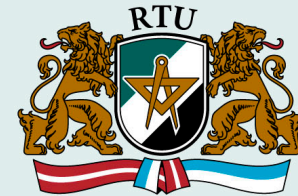
Janis Zvirgzds
Riga Technical University
Spatial and Regional research center

Outline



- Riga Tehnical University from 1862
- Faculty of Civil Engineering
- Institute of Transport structures
- Geomatics division
- GNSS related programmes
- International cooperation
- Conclusions

Riga Technical University



1862–1918 Riga Polytechnical Institute,



1919–1958 Part faculties joined University of Latvia

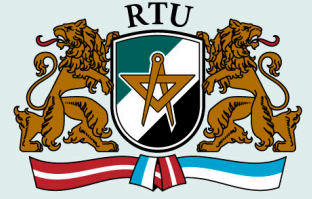


1958–present Riga Technical University,



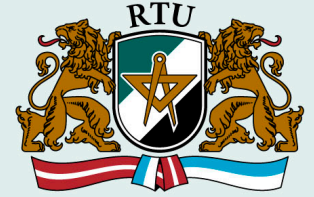
Faculty of Architecture and Urban planning
Faculty of **Building and Civil engineering**
Faculty of Computer Science and Information Technology
Faculty of Electronics and Telecommunications
Faculty of Engineering economics
Faculty of Materials Science and Applied Chemistry
Faculty of Power and Electrical engineering
Faculty of Transport and Mechanical engineering

Faculty of Civil Engineering



- Heat, Gas, and Water Technology Institute;
- Institute of Building Production;
- Institute of Materials and Structures;
- Institute of Building and Reconstruction;
- **Institute of Transport Structures**

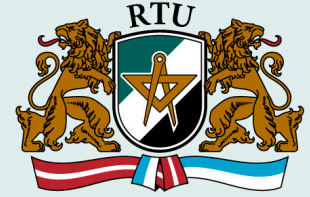
Institute of Transport Structures



Programmes:

- Civil Engineering
- **Geomatics**
- Heat, gas and water technology
- Transportation Engineering

Geomatics



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Dr. sc. ing.
8 semesters



Mernieks.lv

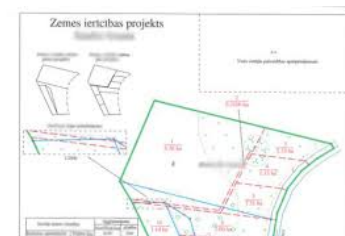
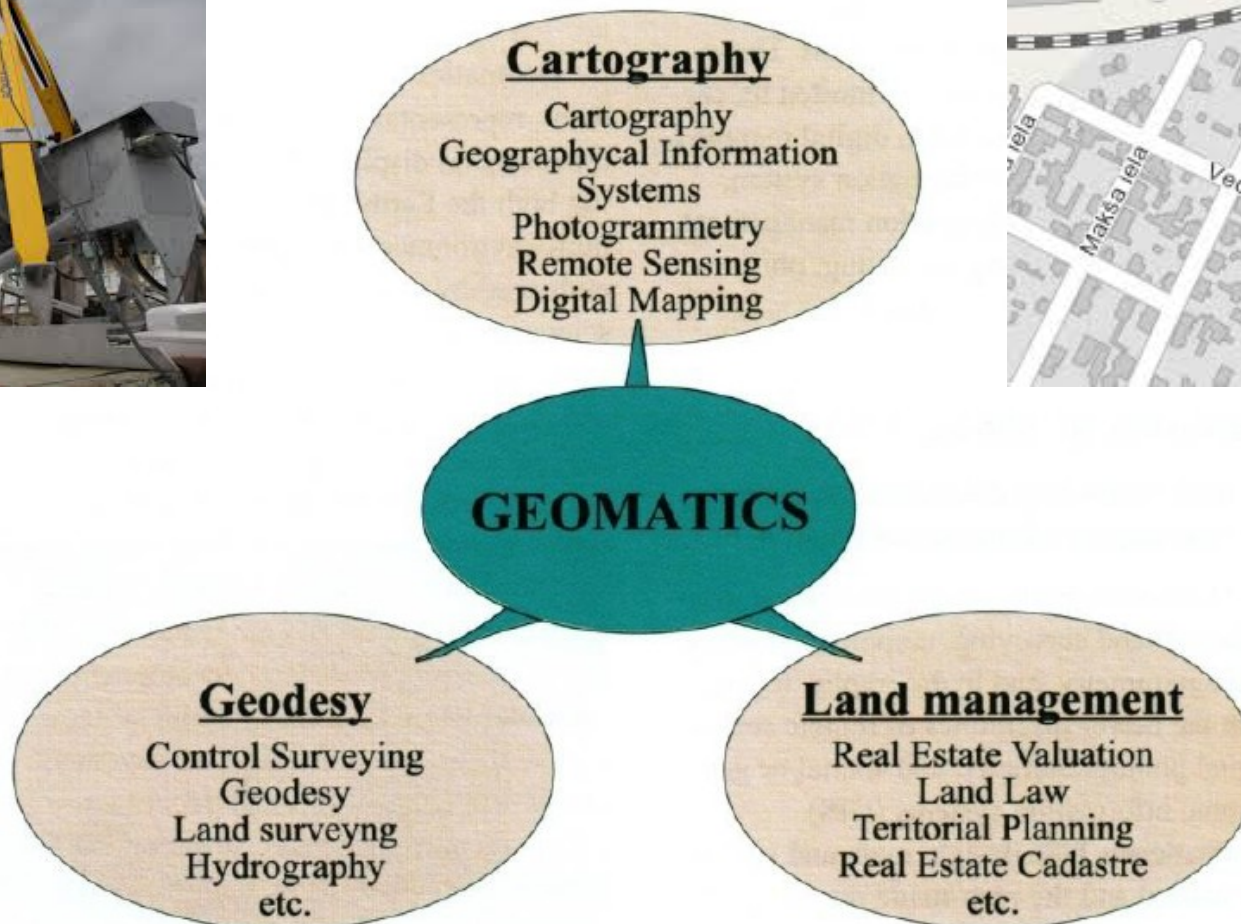
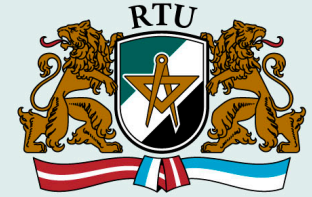
MEng
3 semesters

BEng
6 semesters

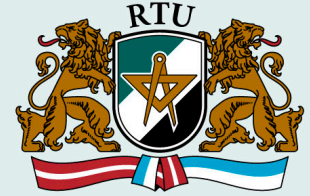


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Geomatics



GNSS programmes



- Global Positioning System Basics
- Global Positioning Systems
- Height determination with GPS



Mernieks.lv

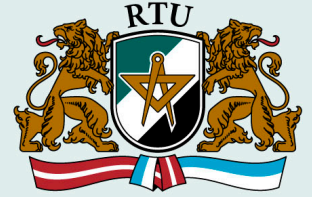
Global Positioning System Basics



- Introduction. Control questions for point (on-site) survey methods.
- Insights Positioning System in the structure
- System of historical development and future trends
- Earth observation satellites (satellites), their orbits visibility
- Global positioning and navigational instruments and measurement techniques
- Global Positioning methods and geodetic networks
- Positioning methods in geodetic measurements
- Positioning methods in construction
- Legal documents and standards
- Practical work and tasks independently



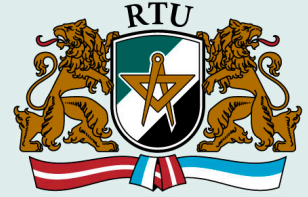
Global Positioning Systems



- Introduction. Control questions for global positioning methods.
- Insights Positioning System structure.
- System user segment and future trends.
- Earth observation satellites (satellites), their orbits visibility.
- Global positioning and navigational instruments and measurement techniques.
- Global positioning system coordinates and time.
- Multiphase generators and signal access.
- Earth's atmospheric effects.
- Constructing mathematical models and analysis.
- Practical work and tasks independently.



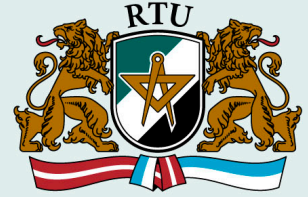
Height determination with GPS



- Introduction. Control questions for height reference surfaces.
- Preview of the height of the systems and their determination.
- Height conversions between systems.
- Quasigeoid model development and analysis.
- The High Court and Reduced global positioning measurements.
- Global positioning height detection comparison with instrumental methods.
- Altimetry calibration site.
- Latvian and international experience in the height determination with GPS.
- The height of the transfer (leveling) perspective with GPS.
- Practical work and tasks independently.



Graduate papers of students



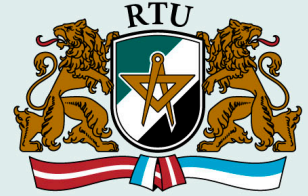
- April 2014. doctoral thesis «Determination methods of High-precision Latvian geoid model»
- Mg: The height model testing and evaluation
- Mg: GNSS support systems evaluation
- Bc: Troposphere and its effects on GNSS observations
- Mg: GNSS in marine navigation and shipping logistics problems
- Mg: Earth tides and their effect on the DGNSS positioning results
- Mg: Multiple radio signal reflection effect on measurements DGNSS
- Mg: Quasigeoid acquisition in Latvian southeastern part, varying with geodetic data



International students



International cooperation



- Member of FIG

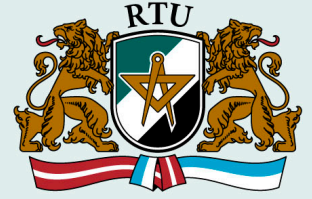
- EUREF



- EUPOS



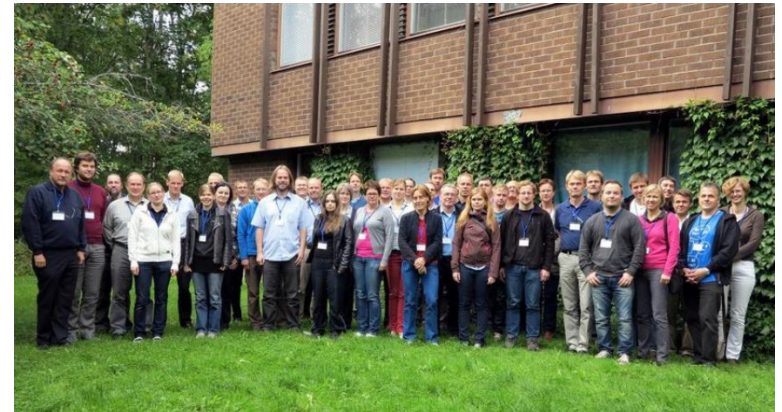
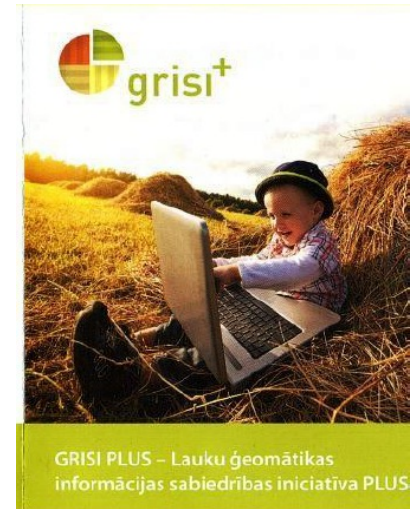
Cooperation in projects



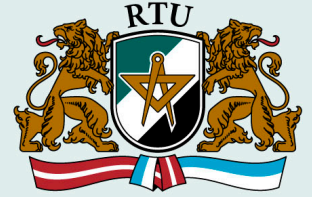
- grisi+ (GIS for countryside)
- Cooperation with Hochschule
- Karlsruhe (GNSS)
- Nord Plus project
- NGK summer schools



Hochschule Karlsruhe
Technik und Wirtschaft
UNIVERSITY OF APPLIED SCIENCES



Conclusions



- Basics of systems
- Understanding how it works
- Expand international cooperation
- 15 students annually
- Special courses for surveyors
(renew knowledge)



Thank You for attention!

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- Geomatics
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- www.rtu.lv

