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I.1 Teaching activities

The Department’s teaching activity provides the theoretical background for geodesy as a science concerning the geometric shape of the Earth and its gravity field. This is accompanied by the theory of measurements, methods of positioning, data processing, statistical analysis and informatics. Both theoretical and practical aspects are considered, emphasising current and future trends in geodesy. The Department covers education in subjects concerning geometric
geodesy, physical geodesy, geodetic astronomy, satellite geodesy, statistical processing of measurements, geoinformatics and computer science.

II. EQUIPMENT

II.1 Teaching and Research Laboratories

Observatory for Geodetic Astronomy - A research laboratory oriented towards geodetic positioning methods using natural and artificial celestial bodies and their integration with terrestrial geodetic methods.

Laboratory for Geodesy and Metrology - A research and educational workplace directed at the development of terrestrial measurement methods and techniques, laboratory tests, and calibration and comparison of geodetic instruments and devices.

Laboratory for Geoinformatics - Serves as a research and educational workplace focusing on applications of computer technologies for Geographical Information Systems and Land Information Systems.

The Modra-Piesok Geodynamic Reference Control Site is used for permanent positioning by the GPS method and for absolute and relative measurements of gravity acceleration as part of international geodynamic research projects. The permanent GPS observations at Modra-Piesok are included in the European Reference Frame that is used for construction and maintenance of geodetic networks in Europe.

II.2 Special Measuring Instruments and Computers

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Brand(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total station</td>
<td>Topcon GTS-6</td>
</tr>
<tr>
<td>Electronic theodolite</td>
<td>Wild T 2000</td>
</tr>
<tr>
<td>Electronic distance meters</td>
<td>DI 2000, Di 5</td>
</tr>
<tr>
<td>GPS receivers</td>
<td>TRIMBLE 4000 SSE, TRIMBLE 4000 SSi (two units), Geoexplorer II, MARCH IIE (two units)</td>
</tr>
<tr>
<td>Levelling instruments</td>
<td>Wild Na 2000, Zeiss Ni 002 (three units)</td>
</tr>
<tr>
<td>Astronomical instruments</td>
<td>Wild T4, Circumzenithal RIGTC 100/1000, Circumzenithal RIGTC 50/500</td>
</tr>
<tr>
<td>Gravity meters</td>
<td>Worden, Scintrex CG2</td>
</tr>
<tr>
<td>Laserinterferometric comparator</td>
<td>LIK</td>
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</table>

III. TEACHING

III.1 Graduate Study

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Hours Per Week</th>
<th>Lecturer</th>
</tr>
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<tbody>
<tr>
<td>Computer Science</td>
<td>1</td>
<td>2 – 3</td>
<td>P. Černý</td>
</tr>
<tr>
<td>Geoinformatics</td>
<td>3</td>
<td>3 – 3</td>
<td>J. Chalachanová</td>
</tr>
</tbody>
</table>
V. RESEARCH PROJECTS

1. The Effects of Earth's Dynamics and Regional Atmospheric Processes in Continual Observations of the Central European GPS Network. VEGA Project 1/8252/01. Leader: Assoc. Prof. Ján Hefty, PhD.

2. UNIGRACE - Unification of the Gravity Network in Central and Eastern Europe. Supported by the EU under the INCO-COPERNICUS programme. National coordinator: Assoc. Prof. Marcel Mojzeš, PhD.

3. Geodetic Monitoring of Deformations of the Earth's Surface. VEGA Project 1/8251/01. Leader: Assoc. Prof. Marcel Mojzeš, PhD.


VI. COOPERATION

VI.1 Cooperation in Slovakia

1. Ministry of Transport, Post and Telecommunications of the Slovak Republic, Bratislava
2. Ministry of Agriculture, Bratislava
3. Ministry of the Environment, Bratislava
4. Authority of Geodesy, Cartography and Cadastre, Bratislava
5. Geodetic and Cartographic Institute, Bratislava
6. Research Institute of Geodesy and Cartography, Bratislava
7. Railways of the Slovak Republic, Bratislava
8. Air Traffic Control Administration of the Slovak Republic, Bratislava
9. Geophysical Institute of the Slovak Academy of Science, Bratislava
10. Faculty of Mathematics and Physics of Comenius University, Bratislava
11. Dionýz Štúr State Geological Institute, Bratislava

VI.2 International Cooperation

1. Warsaw University of Technology, Poland
2. FÖMI - Satellite Geodetic Observatory, Penc, Hungary
3. Technical University of Budapest, Hungary
4. Technical University of Vienna, Austria
5. Faculty of Mining and Geology, Mining University, Ostrava, Czech Republic
6. Institute of Cartography and Geodesy, Frankfurt am Main, Germany
7. Czech Technical University, Prague, Czech Republic
8. Technical University of Brno, Czech Republic
9. Technical University of Dresden, Germany
10. Department of Geodesy and Geomatics Engineering, University of New Brunswick, Fredericton, Canada

VII. THESIS

VII.1 Graduate Theses

<table>
<thead>
<tr>
<th>No.</th>
<th>Student’s Name</th>
<th>Title</th>
<th>Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>T. Bacigál</td>
<td>Least Squares Spectral Analysis and Its Applications in Geodesy</td>
<td>J. Janák</td>
</tr>
<tr>
<td>2.</td>
<td>J. Blaško</td>
<td>Quality Analysis of Differential Corrections for DGPS</td>
<td>J. Hefty</td>
</tr>
<tr>
<td>3.</td>
<td>D. Danko</td>
<td>Continuity Assessment of the Operation of Permanent GPS Stations</td>
<td>J. Hefty</td>
</tr>
<tr>
<td>4.</td>
<td>J. Ferko</td>
<td>Determination of the Geoid to Quasi-Geoid Differences in Slovakia</td>
<td>M. Mojzeš</td>
</tr>
<tr>
<td>5.</td>
<td>M. Hrčka</td>
<td>Analysis of a Long-Term Time Series of Position Variations</td>
<td>J. Hefty</td>
</tr>
<tr>
<td>6.</td>
<td>M. Húšťava</td>
<td>Specialised Database Analysis</td>
<td>J. Chalachanová</td>
</tr>
<tr>
<td>7.</td>
<td>M. Katrenčík</td>
<td>Use of the Global Positioning System (GPS) for Horizontal Geodetic Networks</td>
<td>J. Mičuda</td>
</tr>
<tr>
<td>8.</td>
<td>J. Maták</td>
<td>Determination of the 3-D Location of the Pillars of the Top of the Faculty Building, Using Spatial and Terrestrial Measurements</td>
<td>L. Husár</td>
</tr>
<tr>
<td>10.</td>
<td>M. Mrava</td>
<td>Determination of the Quasi-Geoid from Integrated Measurements in the Dubník Area</td>
<td>L. Husár</td>
</tr>
</tbody>
</table>
11. T. Németh Relative Positioning Using Global Positioning System (GPS) with an Analysis of the Troposphere and Ionosphere

12. R. Pauli Analysis of the Accuracy of Polynomial Transformations

13. V. Pelech Use of Effective Algorithms in Applied Software Programming

14. J. Mičuda Adjustment of a Horizontal Geodetic Network

15. V. Stromček Proposed Object-Oriented Model of a System for Evidence and Administration of an Oil Conduit Network

16. M. Tomko Spatial Databases for Mobile GIS Applications

17. P. Zdráhal Thematic Modelling of Land

IX. PUBLICATIONS

IX.1 Journals


IX.2 Books and Textbooks


IX.3 Conferences


