

## **GEODESY AND GEOINFORMATICS LABORATORY**

- I. Location of the Laboratory:** A/4 Building, Ground Floor Room 13 (practical training room), C2 109, and the ground floor lobby of the Dean's Office of the Faculty of Earth and Environmental Sciences and Engineering in the A/4 Building (Exhibition Area of the History of Geodesy and Mine Surveying).
- II. Institute Operating the Laboratory:** Institute of Geography and Geoinformatics
- III. Persons Responsible for the Laboratory:** Dr. János Vágó, Institute Director, Associate Professor, Dr. István Havasi, Head of Department, Associate Professor, and Marcell Szilvási, Research Assistant
- IV. Purpose and Tasks of the Laboratory in Education, Research, and Scientific Services:**
  - Supporting practical field education in geodesy and mine surveying, student research activities (TDK), and thesis projects.
  - Providing theoretical and practical education in spatial information/geoinformation systems and supporting professionally oriented thesis projects.
  - Conducting geodetic and geoinformatics research within PhD education (Sándor Mikoviny Doctoral School).
  - Providing the technical infrastructure required for research activities related to the professional profiles of the relevant departments of the Institute of Geography and Geoinformatics.
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- V. Examinations, Experiments, and Services Available in the Laboratory**
  - Providing surveying instruments for field geodetic measurement tasks.
  - Performing geodetic and mine surveying calculations (basic geodetic calculations, geostatistical calculations, mine surveying calculations, volume determination, coordinate transformations, etc.).
  - Computer-assisted cartography.
  - Spatial analyses in a GIS environment.
  - Development of spatial information systems and expert systems.
  - Introduction to satellite (GPS) measurements and practical demonstration of RTK surveying.
  - Professional guidance of domestic and international visitor groups to the exhibition area by qualified program leaders in Hungarian and, where applicable, English, as well as supporting university and faculty student recruitment programs.

## VII. Laboratory Equipment and Main Instruments with Technical Specifications

- Traditional optical geodetic and mine surveying instruments (theodolites, leveling instruments).
- Electronic surveying instruments (total stations / Leica TS06 /).
- New Equipment
- FJ Dynamics P1 or S1 handheld mobile laser scanner with RTK antenna and accessories.
- FJ Dynamics GNSS RTK rover set with rover and base station functions (FJD V10a or V10i system with E600 controller).
- Software: Surfer 8.0, Grapher 2D (Golden Software products).
- FJ Dynamics Trion Model license for processing handheld laser scanner data.
- ArcGIS Pro.
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## VIII. Key Professional Partners

- Hungarian mining professional organizations (e.g., the National Association of Hungarian Miners and Metallurgists and the Hungarian Mining and Geological Survey).
- Domestic mining companies.
- 3D Geosolutions Hungary Ltd.

## IX. Additional Information Relevant to the Evaluation of the Laboratory's Activities

In the exhibition section of the laboratory, historical geodetic and mine surveying instruments can also be viewed. This collection of instruments is certainly unique in Hungary and may even be unique internationally, as visitors can observe and learn about traditional surveying instruments developed in Selmecebánya, Sopron, and Miskolc, displayed in individual exhibition showcases.

