

## **Tárgy neve: Measurements and data collection**

**Tárgyfelelős neve:** Dr. Kovács Béla

**Tárgyfelelős tudományos fokozata:** PhD

**Tárgyfelelős MAB szerinti akkreditációs státusza:** AT

### **Purpose of education:**

#### **a), knowledge**

- Theoretical/practical knowledge of satellite positioning and navigation systems
- Knowledge of field data collection equipment
- Theoretical and practical knowledge of general tools for geoinformatics and geodesy

#### **b), abilities**

- Ability to orientate spatially with or without instruments
- Ability to program and operate field data collection equipment
- Ability to locate and navigate with and without instruments
- Ability to select and locate a sampling site
- Ability to carry out planned measurements using ground and airborne (e.g. GNSS instrument, drone) field data collection equipment

#### **c), attitude**

- Monitors professional and technological developments in the field of geoinformatics and the labour market trends.
- Committed to environmentally conscious behaviour in his/her field and laboratory activities.
- Committed to adhering to and making others adhere to quality requirements.

#### **d), autonomy and responsibility**

- Independence regarding the thorough examination and elaboration of professional issues and processes.
- Feels responsible for meeting and making others meet the deadlines. He/she is responsible for his/her work and for his/her co-workers' work in projects.
- With his/her knowledge and skills of geoinformatics, he/she cooperates responsibly with professionals in other fields.

### **Content of education:**

- planning and execution of field measurements and data collection
- objective and subjective sources of danger, emergency management
- map reading, use of maps, orienteering on field
- theory and practice of GNSS
- sub-metre and sub-cm level satellite-based positioning
- errors in field measurements and how to eliminate/reduce them
- mapping of sampling locations and GI data collection
- how to navigate on field
- UAV/drones in fieldwork
- mobile mapping equipment and solutions

**Evaluation system:** practical course mark based on course work.

### **Literature:**

#### **Obligatory:**

- Hofmann-Wellenhof, Bernhard, Lichtenegger, Herbert, Wasle, Elmar, 2008. GNSS – Global Navigation Satellite Systems, Springer-Verlag Wien, ISBN: 978-3-211-73012-6
- Esmat Bekir: Introduction to Modern Navigation Systems, World Scientific Publishing Company, 2007

- Mohinder S. Grewal, Lawrence R. Weill, Angus P. Andrews: Global Positioning Systems, Inertial Navigation, and Integration, Wiley, 2007, ISBN: 978-0-470-09971-1

**Recommended:**

- Laurie Tetley et al: Electronic Navigation Systems, Taylor & Francis, 2012, ISBN: 978-0-7506-5138-7
- GIS – Collecting Field Data (<https://guides.library.yale.edu/GIS/Collector>)