

## **LEARNING OUTCOMES**

1) in the area of knowledge, the student:

- a. Has knowledge of advanced IT methods in geodesy and cartography;
- b. Has knowledge of foreign languages in the field of geodesy and cartography;
- c. Is familiar with the general principles of entrepreneurship, copyrights and industrial property rights, business etiquette, occupational health and safety regulations and basic principles of ergonomics;
- d. Has extensive knowledge of mathematics required for work in the field of geodesy and cartography;
- e. Has extensive knowledge of geodesy, higher geodesy, physical geodesy, geodynamics and geoinformatics;
- f. Has extensive knowledge of satellite remote sensing;
- g. Has organized theoretical knowledge of practical geodesy and special measurements, including measurements that involve laser, ultrasound and electromagnetic sensors;
- h. Has extensive knowledge of global navigation satellite systems (GNSS), planning and satellite measurements, and is able to put that knowledge to practical use;
- i. Has extensive knowledge of cartography, spatial analyses and visualization techniques.
- j. Has extensive knowledge of programming, designing and administering geoinformatics systems, CAD software and data transmission methods;
- k. Understands social, economic, legal and non-technical aspects of engineering operations and uses that knowledge in engineering practice;

2) in the area of skills, the student:

- a. Deploys IT solutions in geodetic and cartographic applications;
- b. Has working knowledge of a foreign language, including specialist language in the field of geodesy and cartography;
- c. Performs preliminary economic assessments for engineering projects;
- d. Has the necessary knowledge and skills for work in an industrial setting, is familiar with work safety requirements;
- e. Uses analytical methods to formulate and solve engineering tasks and simple research problems in the field of geodesy and cartography;
- f. Acquires and uses information in the field of geodesy, higher geodesy, physical geodesy, geodynamics and geoinformatics;
- g. Uses satellite remote sensing tools in engineering projects in the field of geodesy and cartography;
- h. Plans field measurements and experiments, performs engineering measurements and special measurements, processes and interprets results;

i. Puts the knowledge of GNSS to practical use, plans and performs measurements with the involvement of satellite measurement methods, performs object positioning projects, processes the results of satellite observations;

j. Has knowledge of the Unmanned Aerial Vehicles, GPR measurements and hydrographic surveys;

k. Processes, analyzes and visualizes spatial data in various ways

l. Designs components of geoinformatics systems, uses geoinformatics tools and CAD software, updates and manages system data, creates access to data;

m. Integrates legal knowledge with knowledge of geodesy and cartography to formulate and solve engineering tasks and non-technical problems.

n. Analyzes, proposes and develops modern and professional tools and solutions relevant to the field of geodesy and cartography.

3) in the area of social competence, the student:

a. Recognizes the need for lifelong learning, continuously improves his/her qualifications through education (doctoral studies, post-graduate studies, courses), recognizes the need for personal and social skills improvement, thinks and acts in an entrepreneurial manner;

b. Has teamwork skills and is able to perform various engineering projects in a team effort;

c. Correctly identifies and solves problems associated with land surveying

d. Recognizes the importance of digital technologies in public life.

e. The student is creative, capable of solving tasks and conceptual problems independently, is aware of the relationships between objects in space, can effectively present and communicate spatial problems, actively uses geoinformatics tools;

f. Has teamwork skills and is capable of performing different roles and choosing priorities for tasks and projects;

g. Creatively uses the latest open source IT solutions;

h. Observes legal regulations applicable to geodetic engineering and the relevant laws;

i. Recognizes the significance of non-technical aspects and understands the implications of engineering activities, including their environmental impacts;

j. Is open to new advances and technologies in geodesy and cartography.