Tárgy neve: Introduction to QGIS

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Tárgyfelelős tudományos fokozata: PhD
Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Purpose of education:

a) knowledge
 - Comprehensive knowledge of the principles, methods and procedures for the design, development and operation of geoinformatics, in particular in the following areas: operating systems and database management, design and development of web-based geoinformatics tools and services, geoinformatics-related programming principles, geospatial application development.
  -Knowledge of the specific tools of the field of cartography and geoinformatics, the mathematical and cartographic principles of editing maps for different purposes, the ability to apply survey procedures, representational solutions and various reproduction technologies.
  - Ability to create maps and geoinformatics systems that can be used by economic sectors or clients in the desired field.
b) abilities
  - Ability to interpret and formalise complex professional problems in the field of cartography and geoinformatics, to identify the necessary theoretical and practical background and to solve the problem. Ability to provide consultancy, problem-solving, design, development, operation and management of cartographic and geoinformatics systems, decision support systems and expert systems.
 - Ability to interpret, plan, organise, manage and control processes in the field of cartography and geoinformatics.
- Ability to learn and apply new problem-solving methods and procedures in the field.
c) attitude
- It monitors professional and technological developments in the field of cartography and geoinformatics and the opportunities that will enable it to work in the public sector, in various companies or to set up and run its own business.
- Shares his/her own knowledge and values the dissemination of professional results in cartography and geoinformatics.
- It is committed to meeting and enforcing quality standards (accuracy, commitment).
 d) autonomy and responsibility
  - Able to work independently in IT, carrying out tasks, thinking through and developing technical issues in a self-directed manner and at a pace.
 - Responsible for meeting and enforcing deadlines. Assumes responsibility for his/her own work and that of his/her colleagues working under his/her direction and with him/her (in a project).
 - In the case of mission-critical mapping and geoinformatics systems, may be given development and operational responsibility appropriate with his/her professional competences.

Content of education:
The course aim is to introduce those students into the application into QGIS, whose do not have enough practice in it. The topics, which appears in the course:
Vector formats: GPKG, Shapefile, GPX, GeoJSON
Layers.
Symbology: single, graduated, categorized, rule-based. Styling map features. Map editing rules.
Labeling: single labels, rule-based labelling
Selection and querying in QGIS
Visualization of thematic data, importing textfiles, working with statistical data. Joins. Diagrams. Creating thematic maps at 1:500 000 scale.
Layout.
Working with raster data. The Geotiff format. Georeferencing.
Basic and advanced drawing tools in QGIS. Vectorization.

Working with digital terrain models: hypsometric tint, contour lines generation, hill shading. 3D View. Elevation profile.
Working with satellite images, NDVI index.
Important QGIS plugins.

Evaluation system: practical course mark based on course work.

Literature:
Obligatory:
The newest QGIS online documentation: https://www.qgis.org/
- Menke, K.: Discover QGIS 3.x: A Workbook for Classroom or Independent Study. Locate Press. 406 p. 2019 ISBN: 9780998547763

Recommended:
- Sherman G.: The PyQGIS Programmer's Guide: Extending QGIS 3 with Python 3. Locate Press. 252 p. 2018. ISBN: 9780998547725