

Tárgy neve: Development of scripts and plugins in geoinformatics software

Tárgyfelelős neve: Dr. Gede Máttyás

Tárgyfelelős tudományos fokozata: PhD

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja:

a, knowledge

- Knowledge of the current theories, models and literature of geoinformatics based on scientific results.

He/she is aware of the possible development directions and limits of the field of geoinformatics.

- Comprehensive knowledge and understanding of the key relationships and concepts in the field of geoinformatics, in particular in the following areas: geolocation data collection technologies, 2- and 3-dimensional geoinformatics modelling, geovisualization, spatial data infrastructures, geoinformatics programming and application development, vector and raster geoinformatics, digital image processing, web-based geoinformatics solutions, geoinformatics databases, applied geoinformatics systems.

- Knowledge of the specific tools of geoinformatics, ability to apply field survey procedures, data management and analysis, and visualization solutions. Knowledge and use of spatial data collection technologies, available databases and spatial information software, as well as open-source and commercial geoinformatics software, cloud-based geoinformatics solutions.

b, abilities

- Ability to interpret complex professional problems in the field of geoinformatics, to explore the necessary theoretical and practical background and to solve problems.

- Ability to initiate cooperation with design and development professionals and end users of geoinformatics results.

- Ability to create geoinformatics systems to support and assist decision makers

c, attitude

- Accepts and adheres to the ethical principles of work and organizational culture, especially with regard to the copyright related to geoinformatics.

- 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.

Az oktatás tartalma:

In the first part of the semester, the students are getting familiar with the development of plugins in QGIS. In the second half of the semester, they acquire practice in the scripting of ArcGIS with Python.

At the end of the semester, the students will be able to script this software while solving individual tasks.

Some planned examples:

1. Exercises in QGIS

a. Basics of module development

b. Creating animated KML files in QGIS

c. Generalizing buildings in QGIS

d. Correcting generalized digital elevation models with river geometry

e. EOTR sheet finding plugin.

2. Scripting in ArcGIS

a. Introduction to scripting in ArcGIS

b. Creating Relief energy maps from digital elevation models with various grid size

c. Getting information from digital elevation models based on vector type data

d. Route planning/networks

e. Geocoding scripts

f. Sequential map printing. Exporting layers from a given area. Setting predefined styles with scripts.

A számonkérés és értékelés rendszere: practical course mark based on course work.

Kötelező irodalom:

- QGIS online Documentation, PyQGIS Developer Cookbook:
https://docs.qgis.org/3.4/en/docs/pyqgis_developer_cookbook/
- Gary Sherman: PyQGIS Programmer's Guide. Extending QGIS 3 with Python 3. LocatePress LLC. ISBN: 9780998547725
- ArcGIS Pro Desktop: Creating Tools with Python.
<https://desktop.arcgis.com/en/arcmap/10.3/analyze/creating-tools/a-quick-tour-of-creating-script-tools.htm>

Ajánlott irodalom:

- QGIS Plugins: <https://plugins.qgis.org/>
- Tateosian, L.: Python for ArcGIS, Springer, 2015. ISBN: 9783319183985