



Course title: GIS PROGRAMMING

ECTS credit allocation (and other scores): 3

Semester: spring

Level of study: ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 45

Course coordinator/ Department and e-mail: Tomasz Templin, Ph.D., Institute of Geodesy,
tomasz.templin@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES:

GIS customization, ArcGIS ModelBuilder, Python language and IDE, Python fundamentals, Reading and writing geospatial data, Debugging and error handling, Creating Python functions and classes, Working with spatial data and map documents, Working with databases.

LECTURES:

Introducing to GIS and Python, Geoprocessing in GIS, Python language fundamentals, Python Libraries for Geospatial Development, Sources of Geospatial Data, Working with Geospatial Data in Python, GIS in the Database, Working with databases using Python.

Learning purpose: This course teaches how to automate GIS tasks using the Python scripting language.

On completion of the study programme the graduate will gain:

Knowledge: Define the basic concepts and methods of object-oriented programming. Demonstrate an understanding of programming techniques (applied to Python). Expand programming capabilities within GIS.

Skills: Use modern computational environment to automate processing of geospatial data. Prepare new GIS models, create new GIS tools using the Python programming language. Develop the applications to resolve various geospatial problems.

Social Competencies: Have skills for leading and participating in small group programming projects.

Basic literature:

- 1) Zandbergen P., Python Scripting , wyd. Esri Press, 2015 ;
- 2) Westra E., Python Geospatial Development, wyd. PACKT Publishing, 2013

Supplementary literature:

- 1) Downey A. , Think Python. How to Think Like a Computer Scientist, wyd. Green Tea Press, 2012
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The allocated number of ECTS points consists of: 75 h.

Contact hours with an academic teacher: 50 h.

Student's independent work: 25 h.