



Course title: **GIS Systems**

ECTS credit allocation (and other scores): 3.5

Semester: spring

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

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 45

Course coordinator/ Department and e-mail: dr inż. Szymon Czyża / Institute of Building Engineering
Szymon.czyza@uwm.edu.pl

Type of classes: classes

Substantive content

CLASSES: As part of the practical classes, students will develop projects that support optimal decision-making, including identifying suitable locations for investments. Students will acquire knowledge about the possibilities of integrating various sources of spatial information and the proper selection of such sources, particularly with regard to open public data.

LECTURES: GIS and its applications. Basics of GIS systems (ArcGIS, QGIS). Data and their sources. Creating and editing data (vector data, raster data, attribute tables). Fundamentals of spatial analysis. Cartographic composition. Advanced vector data editing. Advanced visualization of vector data. Advanced spatial analyses. Workflow automation. Extended GIS functionality.

Learning purpose: Preparing students for confident and informed work with spatial data in a selected GIS environment (ArcGIS, QGIS), including data acquisition, processing, analysis, and presentation in the context of supporting decision-making processes.

On completion of the study programme the graduate will gain:

Knowledge: The student knows and understands the applications of GIS systems as well as the types of spatial data and their sources. In addition, the student understands the purposes of conducting spatial analyses and knows the principles of spatial data visualization.

Skills: The student is able to confidently use a selected GIS system and carry out a simple GIS project, including identifying its objectives, creating the project database, performing spatial data analysis, and appropriately presenting and discussing the obtained results.

Social Competencies: The student is ready to take responsibility for the proper selection and use of GIS to solve a given problem, as well as for the diligent performance of duties and for assisting colleagues and subordinates within the assigned scope of tasks.

Basic literature:

Longley, P. A., Goodchild, M. F., Maguire, D. J., Rhind, D. W. (2015). Geographic Information Systems and Science.

Bolstad, P. (2019). GIS Fundamentals: A First Text on Geographic Information Systems.

QGIS Documentation & Training Manual (QGIS.org)

Burrough, P. A., McDonnell, R. A., Lloyd, C. D. (2015). Principles of Geographical Information Systems



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The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 47

Student's independent work: 40.5