

SYLLABUS

Name: GIS systems in industrial environment
Name in Polish: Systemy GIS w środowisku przemysłowym
Name in English: GIS systems in industrial environment

Information on course:

Course offered by department: Faculty of Organisation and Management
Course for department: Silesian University of Technology
Study level and form: [Master's degree, Full-time](#)
Term: [2020/2021, spec. Management and Production Engineering](#)
Coordinator of course edition: [Phd Marek Szafraniec](#)

Default type of course examination report:

PASS

Language:

English

Course homepage:

<https://platforma.polsl.pl/roz/course/view.php?id=789>

ECTS

3

Short description:

The classes are intended to provide structured knowledge, acquire skills and social competences related to the use of available methods and tools of spatial information systems, supporting decision-making processes in solving problems in the industrial environment and the integration of these tools with the enterprise information system.

Description:

Detailed content:

Lectures (15h):

- Introduction to the subject of GIS systems.
- Basic concepts, definitions, and evolution of GIS systems.
- Spatial information systems in the industrial environment - classification of GIS systems. Features and functions of GIS systems.
- Databases in GIS systems. The concept of a digital map and its elements: layers, objects, descriptive attributes.
- GIS software - commercial and as an opensource. Open Geospatial Consortium (OGC).
- Sources and methods of obtaining external spatial data. WMS services and other external sources of spatial data and information. National centers of geodesy and cartography. Others GPS systems: NAVSTAR, GALILEO, GLONASS.
- Spatial analyzes: layering, aggregating features, creating buffer areas. Network analysis.
- Advantages, disadvantages, and limitations of GIS systems.

Laboratories (15h):

- Introduction to the use of QGIS software,
- Interface personalization of QGIS,
- Exploration of sample data in QGIS,
- Getting skills and knowledge of the basic functions of the QGIS system,
- Using external data sources, using WMS services.
- Working with layers, objects, and tables - adding, processing and deleting elements,
- The use of plugins - add-ons and modules extending the analytical functionality of QGIS software,
- Create your own layers, features and attribute tables in QGIS,
- Conducting spatial analyzes: layering, aggregating features, creating buffer areas.
- Conducting network analyzes.
- Conducting selected economic, economic, and environmental analyzes in QGIS,

Number of hours of classes with members of academic staff or other persons conducting classes and students

- Lecture: 15h
- Laboratory – 15h

The number of hours devoted to the student's own work

- Test preparation: 30 hours
- Performing laboratory tasks: 30 hours.

Total number of hours: 90

Number of ECTS credits for the subject: 3

including: number of ECTS credits obtained as part of classes conducted with the participation of academic teachers or other course participants and students: 1

Bibliography:

- QGIS Desktop Guide/Manual. (QGIS 3.12), QGIS Project, 2020.
- QGIS Server Guide/Manual (QGIS 3.16), QGIS Project, 2020.
- Laurini R., Thompson D., Fundamentals of spatial information systems. The APIC Series, no 37, London 1999.

Learning outcomes:

Lectures:

K1A_W08 - a student knows and understands selected issues of computer science and information technology and the basics of signal analysis and data processing in the context of spatial information systems

Laboratories:

K1A_U06 - a student can plan and carry out experiments, including measurements and computer simulations, interpret the obtained results and draw conclusions related to solving engineering problems in the context of spatial information systems

K1A_U14 – student is able to use their knowledge - in the context of spatial information systems formulate and solve complex and non-typical problems and perform tasks innovatively in variable and not fully predictable conditions by:

- proper selection of sources and information from them, making evaluation, critical analysis, and synthesis of this information,
- selection and application of appropriate methods and tools, including advanced information and communication technologies (ICT)

K1A_K01 – is ready for a critical evaluation of existing knowledge and received content in the context of spatial information systems

Assessment methods and assessment criteria:

Lectures

- A positive grade from written test is needed to pass the lecture,
- To pass the test, at least 50% correct answers are required,
- The test can be improved twice - in written or oral form,
- Being active and participating in a constructive discussion during classes can raise the grade for the final test

Laboratory

- the condition for passing the laboratory classes is the development and submission of a report on the laboratory work performed that meets the formal requirements.
- reports prepared incorrectly may be corrected twice.

The final grade is the arithmetic mean of the grade from lectures and laboratory.

Practical placement: