UNIVERSITY
WARMIA AND MAZURY IN OLSZTYN

Faculty of Geodesy, Geospatial and Civil Engineering

Course title: **Information technologies in Geoinformatics**

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. Anna Kowalczyk / Institute of Building Engineering
anna.kowalczyk@uwm.edu.pl

Type of classes:classes

Substantive content

CLASSES: The practical exercises involve working with spatial data in various formats and integrating them using geoinformatics tools. Students learn how to use spatial data web services, process and analyze data obtained from GIS servers, and integrate these datasets within desktop and database environments.

LECTURES: The course provides an introduction to GIS systems and discusses key information technologies used in geodesy and geoinformatics. It presents spatial data formats, principles of their organization, and the role of spatial information infrastructures in Poland and Europe. The lectures cover spatial data web services and internet technologies that enable map publishing and the creation of webGIS systems. An important component of the course is the analysis of data models and the fundamentals of spatial databases and database management systems.

Learning purpose: An introduction to GIS systems and a discussion of key information technologies used in geoinformatics. The course presents spatial data formats, principles of their organization, and the role of spatial information infrastructures in Poland and Europe. It covers spatial data web services and internet technologies that enable map publishing and the development of webGIS systems. An important part of the lectures is the analysis of data models and the fundamentals of spatial databases and database management systems.

On completion of the study programme the graduate will gain:

Knowledge: Understanding the fundamentals of modern information processing and transmission technologies, as well as basic knowledge of developmental trends in the use of information technologies to solve practical problems in geoinformatics, geodesy, cartography, and geomatics.

Skills: Acquiring the fundamentals of modern information processing and transmission technologies, along with basic knowledge of developmental trends in applying information technologies to solve practical problems in geoinformatics, geodesy, cartography, and geomatics.

Social Competencies: Gaining an understanding of the fundamentals of modern information processing and transmission technologies and awareness of developmental trends in the use of information technologies for addressing practical problems in geoinformatics, geodesy, cartography, and geomatics.

Basic literature:

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

Heywood, I., Cornelius, S., Carver, S. (2011). *An Introduction to Geographical Information Systems*.

De Smith, M. J., Goodchild, M. F., Longley, P. A. (2018). *Geospatial Analysis*.

Mitchell, A. (2012). *The Esri Guide to GIS Analysis* (vol. 1–3)

QGIS Documentation & Training Manual (QGIS.org)

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

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 47

Student's independent work: 40.5