



Subject card

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|---|---|--|-------------------------------------|------------|--|---------|-----|
| Subject name and code | Geographical information systems, PG_00044806 | | | | | | |
| Field of study | Geodesy and Cartography | | | | | | |
| Date of commencement of studies | October 2022 | Academic year of realisation of subject | | | 2023/2024 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 2 | Language of instruction | | | Polish | | |
| Semester of study | 3 | ECTS credits | | | 5.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Geodesy -> Faculty of Civil and Environmental Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Adam Ingłot | | | | | |
| | Teachers | dr inż. Adam Ingłot | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 15.0 | 15.0 | 0.0 | 60 |
| | E-learning hours included: 0.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | | Self-study | | SUM |
| | Number of study hours | 60 | 9.0 | | 56.0 | | 125 |
| Subject objectives | Understanding of the origins, evolution and development forecasts of GIS. Understanding the function and essence of GIS in the decision-making process. Understanding the significance of data standardization and data conversion in GIS. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [K6_W09] has basic knowledge and understands the concepts of marine hydrography, sea maps and coastal regions maps, as well as topographic and bathymetric surveys and spatial information systems including their supply with geodetic and hydrographic data | | | | | | |
| | [K6_U05] is able to develop a simple algorithm and prepare a simple program in object-oriented language taking into account the geodetic specifics and the specificity of spatial information systems | | | | | | |
| | [K6_U07] can use reference systems and coordinate frames according to the character of cartographic studies, create a thematic map and apply in practice cartographic generalization | | | | | | |

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| Subject contents | <p>The origins, evolution and development forecasts of GIS as a definition and conceptual scope compared to other information systems. GIS technologies in the decision-making process. Modelling, model concept. Data models: hierarchical, network, relational, object-oriented, object-relational (in the context of GIS). Metadata, harmonization and standardization. Components / modules of standard Spatial Information Systems and basic concepts related to the subject (GIS, LIS, LBS, CAD, CAM, geoinformation, data, attributes, spatial information, redundancy). Data conversion (problem description, descriptive data conversion, spatial data conversion with popular languages, formats and standards: XML, SGML, GML, DXF and their inheritables) - in the aspects of GIS. Information about the relational data base model extended with the structural language of SQL queries and its practical use, query optimization and a construction of dedicated data structures. Normalization of a relational database. Hybrid databases. Data visualization. Rasters model (raster model transformations), image algebra and histogram. Vector data model: simple and topological. Disadvantages (advantages), construction of each type and scope of the stored information. Transformations and geometric corrections of data stored in the vector model. Problems of point, line and surface objects description, enclaves and others. Fundamental problems and mistakes occurring during the process of obtaining vector model data.</p> | | |
| Prerequisites and co-requisites | | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | | 60.0% | 75.0% |
| | | 80.0% | 25.0% |
| Recommended reading | Basic literature | <p>1. David E. Davis „Gis for everyone“</p> <p>2. P. Longley, M. Goodchild, D. Maguire, D. Rhind "New Developments in Geographical Information Systems: Principles, Techniques, Management and Applications"</p> | |
| | Supplementary literature | 1. Paul DuBois „MySQL“ | |
| | eResources addresses | Adresy na platformie eNauzanie: | |
| Example issues/ example questions/ tasks being completed | | | |
| Work placement | Not applicable | | |