

Subject card

Subject name and code	Information Technologies - laboratory, PG_00194270						
Field of study	Geography						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2026/2027	
Education level	Bachelor's studies	Subject group				Obligatory subject group in the field of study	
Mode of study	full-time studies	Mode of delivery				at the university	
Year of study	1	Language of instruction				Polish polish	
Semester of study	1	ECTS credits				2.0	
Learning profile	academic	Assessment form				credit	
Conducting unit	Urban Environmental Research Laboratory (Coastal Cities Living Lab-CCLL) -> Department of Hydrology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Maciej Markowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	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	30		2.0		18.0	50
Subject objectives	The aim of the course is to equip students with practical skills in working with digital data, both in terms of file management and data processing in spreadsheets. Students become familiar with various data formats, conversions, and basic and advanced methods of data analysis. Additionally, the exercises cover the creation of vector and raster graphics, as well as a review of selected mobile applications used for acquiring and processing geospatial data.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[GEOGRL3-U09] is able to work in a group and take on various roles within it, look after the equipment entrusted to them, and ensure their own safety and that of others.		The student works effectively in a group, taking on different roles within the team, and takes care of assigned resources and computer equipment; they adhere to safety rules when working with data, software, and mobile applications.			[SU2] presentation/project/paper/report	
	[GEOGRL3-U04] can apply field and laboratory methods and research tools, spatial analysis methods, and methods of presenting research results in the field of geography, assess their usefulness for tasks in which the application goal of geography can be realized		The student uses IT tools for data processing and analysis, including spreadsheets, vector and raster graphics, and mobile applications; they are able to assess the suitability of each tool for carrying out analytical tasks and presenting research results in the field of geographical sciences.			[SU5] implementation of a problem task	
	[GEOGRL3-U03] can plan and conduct, independently and as part of a team, simple research in the field of geography under the supervision of a scientific advisor, based on the necessary information from professional literature and other sources		The student plans and conducts simple geographical studies using digital data, both individually and in a team, based on professional literature, various data formats, and mobile sources; they are able to prepare analyses and visualize the results in graphical or tabular form.			[SU5] implementation of a problem task	

Subject contents	<p>1. File and Data Management organizing folders and files, relative and absolute paths, copying, moving, packaging, and archiving data; best practices in managing IT projects.</p> <p>2. Flowcharts and Algorithms introduction to representing processes and data in flowcharts; designing simple algorithms and developing logical, analytical thinking.</p> <p>3. File Formats and Data Conversions overview of commonly used data formats (e.g., KML, SHP, GPX, GML, XML, CSV, TSV, XLS, XLSX, GeoJSON, DWG) and their structures; practical data conversion and import/export in spreadsheets and other applications.</p> <p>4. Basic Data Analysis in Spreadsheets using MS Excel and free alternatives to enter, organize, and perform basic data analysis.</p> <p>5. Advanced Data Analysis in Spreadsheets applying functions, formulas, pivot tables, charts, and macros for more complex data analysis.</p> <p>6. Vector Graphics creating and editing vector graphics using free software, including preparing diagrams and data visualizations.</p> <p>7. Raster Graphics basics of editing and processing raster graphics, creating data visualizations, and preparing graphic materials using free tools.</p> <p>8. Overview of Mobile Applications and Geospatial Data introduction to selected mobile applications for acquiring and analyzing geospatial data; integrating mobile data with spreadsheets.</p>											
Prerequisites and co-requisites	<p>Knowledge in the field: basic information in the field of computer science.</p> <p>Skills: using a computer, ability to navigate software running on the Windows operating system.</p>											
Assessment methods and criteria	<table border="1" data-bbox="448 842 1487 947"> <thead> <tr> <th data-bbox="448 842 794 875">Subject passing criteria</th> <th data-bbox="794 842 1141 875">Passing threshold</th> <th data-bbox="1141 842 1487 875">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 875 794 909">project or presentation</td> <td data-bbox="794 875 1141 909">51.0%</td> <td data-bbox="1141 875 1487 909">40.0%</td> </tr> <tr> <td data-bbox="448 909 794 947">practical exercises</td> <td data-bbox="794 909 1141 947">51.0%</td> <td data-bbox="1141 909 1487 947">60.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	project or presentation	51.0%	40.0%	practical exercises	51.0%	60.0%
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project or presentation	51.0%	40.0%										
practical exercises	51.0%	60.0%										
Recommended reading	Basic literature	<ul style="list-style-type: none"> • Cieśla K., 2021, Inkscape. Podstawowa obsługa programu. wydanie II rozszerzone i uzupełnione. Helion, Warszawa. • Witkowski B., 2019,. GIMP. Poznaj świat grafiki komputerowej. Helion, Warszawa. • Wrotek W., 2022, ABC Excel 2021 PL, Helion. • Krok E., Stempnakowski Z., Podstawy algorytmów. Schematy blokowe. Wydawnictwo DIFIN. 										
	Supplementary literature	<ul style="list-style-type: none"> • Wrotek W. Office 2021 PL, 2022, Kurs. Helion. • Curtis D. Frye, Microsoft Office 2007 Krok po Kroku, 2007. Wydawnictwo RM. • Ścieżor T., Technologia Informacyjna dla studentów Inżynieria Środowiska Politechniki Krakowskiej, 2016, Politechnika Krakowska. • Abd-Elhamid Hany F., Zeleňáková Martina, Barańczuk Jacek [i in.], 2023 , Historical trend analysis and forecasting of shoreline change at the Nile Delta using RS data and GIS with the DSAS tool, Remote Sensing, vol. 15, nr 7, s.1-21, Numer artykułu:1737. 										
	eResources addresses											
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> • How can a flowchart support the design of a data processing and analysis workflow (e.g., for tabular or geospatial data)? • What are the basic differences between selected file formats (e.g., CSV, XLSX, XML, GeoJSON, SHP), and in which situations should each of them be used? • Which spreadsheet functions and tools enable data analysis and visualization of results in the context of geographical research? 											
Work placement	Not applicable											

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