



GEODESY AND CARTOGRAPHY FIELD-OF-STUDY LEARNING OUTCOMES

field-of-study: Geodesy and Cartography education level: first-cycle programme education profile: general academic		
Field-of-study (GiK) learning outcomes symbol	FIELD-OD-STUDY LEARNING OUTCOMES – EXPLANATION On completion of the first-cycle programme in GEODESY AND CARTOGRAPHY field-of-study – the graduate:	Related learning outcomes symbols for engineering sciences
KNOWLEDGE		
GiK_W01	has the knowledge of mathematics, physics, environmental engineering and other scientific areas, which is essential for formulating and solving basic tasks related to geodesy and cartography	T1A_W01
GiK_W02	has basic knowledge of the geometric reconstruction of space on the basis of photogrammetric images	T1A_W01 T1A_W03
GiK_W03	knows the principles of statistical analysis of data and the methods of geodetic observations interpretation	T1A_W01 T1A_W04 T1A_W07
GiK_W04	has well-organized knowledge of general and geodetic computer science, including the knowledge of computer software and hardware and computer programming in selected languages, data protection, archiving and programme licenses	T1A_W01 T1A_W05 T1A_W07 T1A_W10
GiK_W05	has the basic knowledge of civil and administrative law, tasks and competencies of the state and self-government administration bodies	T1A_W02 T1A_W03
GiK_W06	knows the principles of digital cartographic generalization, the edition of general geographic and thematic maps and the methods of their geovisualization	T1A_W02 T1A_W03
GiK_W07	knows the principles of electronic surveying instruments operation and data acquisition in the surveying process	T1A_W02 T1A_W04 T1A_W06
GiK_W08	knows the fundamental principles of real estate valuation	T1A_W02 T1A_W08



GiK_W09	has the fundamental knowledge of geodesy and cartography-related law and technology	T1A_W03
GiK_W10	knows the spatial reference systems, coordinate systems, cartographic projections and appropriate systems of coordinates	T1A_W03
GiK_W11	knows the methodology of SIT and spatial data analysis	T1A_W03
GiK_W12	demonstrates the knowledge of surveys used in general structure and transport infrastructure engineering	T1A_W03
GiK_W13	has detailed knowledge of geodetic control surveying, positioning and computation as well as mapping/topographic surveys	T1A_W03 T1A_W04
GiK_W14	is familiar with the scope of data provided by the European spatial information infrastructure and the types of spatial analyses available in GIS	T1A_W03, T1A_W04, T1A_W05
GiK_W15	knows the theory of defining and implementing the astronomical, geodetic and cartographic systems of coordinates, demonstrates the knowledge of higher geodesy, geodetic astronomy and satellite geodesy (Global Navigation Satellite Systems – GNSS)	T1A_W03 T1A_W04 T1A_W05 TA1_W07
GiK_W16	has the fundamental theoretical knowledge of computer graphics	T1A_W03 T1A_W04 T1A_W05 TA1_W07
GiK_W17	knows the automation principles of geodetic and cartographic production process, starting with acquiring information about the area and finishing with its graphical presentation	T1A_W03 T1A_W04 T1A_W07
GiK_W18	knows the principles, methods and purpose of conducting real estate cadastre and real estate management tasks	T1A_W03 T1A_W04 T1A_W08
GiK_W19	has a basic knowledge in the field of photogrammetry and remote sensing methods as well as technologies of spatial data acquisition for the purpose of documentation and supplying database with data database	T1A_W03 T1A_W05 T1A_W07
GiK_W20	is familiar with surveying instruments and the principles of their checking and adjusting	T1A_W03 T1A_W06
GiK_W21	knows the methods of conducting construction-stage surveys, inventory surveys, as well as displacement and deformation surveys	T1A_W03 T1A_W07
GiK_W22	knows the principles of land registry and real estate cadastre	T1A_W03, T1A_W08
GiK_W23	knows the basics of one computer programming language and database design principles, including standards for the exchange of information between databases	T1A_W05 T1A_W07



GiK_W24	is familiar with development trends in the field of direct and remote surveying methods of land data acquisition	T1A_W05, T1A_W07,
GiK_W25	has a basic knowledge of imaging used in remote sensing and of methods applied in thematic information extraction from multi-spectral images	T1A_W05 T1A_W07
GiK_W26	knows the components and design solutions used in residential and public buildings	T1A_W06 T1A_W07
GiK_W27	knows the basic methods, techniques and tools used in solving engineering tasks in the field of geodesy and cartography	T1A_W07
GiK_W28	knows how to organize, arrange and prepare the workstation according to the principles of ergonomics	T1A_W08
GiK_W29	is familiar with the fundamental principles of the intellectual property law	T1A_W08 T1A_W10
GiK_W30	has a basic knowledge of property protection and conducting economic activity	T1A_W09 T1A_W10 T1A_W11

SKILLS		
GiK_U01	knows how to search for information in various reference sources, including Internet resources, can evaluate the merits of the information and use it in practice	T1A_U01
GiK_U02	can expertly use computer software in surveying, has the capacity to develop and modify software applicable in geodetic information technology	T1A_U01 T1A_U02 T1A_U03 T1A_U05 T1A_U07
GiK_U03	has the ability of self-study and individual preparation for seminars, lab classes, tests and exams	T1A_U01 T1A_U05
GiK_U04	can prepare and present an engineering problem related to the field of geodesy and cartography in the Polish and a foreign language.	T1A_U01 T1A_U06
GiK_U05	is capable of using different techniques of communication in the professional environment and other environments	T1A_U02
GiK_U06	is able to use registry database in geodetic work, planning process and real estate management	T1A_U02 T1A_U05 T1A_U07 T1A_U16
GiK_U07	has the capacity to prepare surveying technical specification and geodetic engineering project	T1A_U03 T1A_U06,



GiK_U08	has substantive and methodical knowledge and skills necessary to deliver a presentation connected with the field of geodesy and cartography and other related areas	T1A_U04 T1A_U06
GiK_U09	has the ability to edit general geographic maps with the application of digital and analogue technology	T1A_U07
GiK_U10	can convert the coordinates between the spherical, spatial and cartographic coordinate systems and choose the most appropriate cartographic projection	T1A_U07 T1A_U08
GiK_U11	is able to interpret the contents of remote sensing images.	T1A_U07 T1A_U08 T1A_U09
GIK_U12	can register real world objects in Land Information System as well as develop and implement procedures in the formal language using software tools	T1A_U07 T1A_U010
GiK_U13	is able to perform basic tasks related to the establishment and updating of real estate cadastre	T1A_U08
GiK_U14	has the capability of planning and carrying out surveys, interpreting the results and drawing conclusions	T1A_U08
GiK_U15	is able to perform a statistical analysis of the data and properly apply statistical methods and models in different areas of geodesy and cartography	T1A_U08 T1A_U09
GiK_U16	is able to prepare and implement algorithms designed to solve a specific geodetic problem	T1A_U08 T1A_U13
GiK_U17	is capable of performing image-related measurements and doing calculations in order to obtain data for the basic products of photogrammetry	T1A_U08 T1A_U14
GiK_U18	is able to use analytical, simulation, and experimental methods to formulate and solve engineering tasks	T1A_U09
GiK_U19	knows how to combine spatial data from different sources, is able to perform simple spatial analysis in the SIS and to use a geo-portal that meets the requirements of European spatial information infrastructure	T1A_U09 T1A_U10
GiK_U20	is professionally qualified to perform geodetic works for businesses and institutions	T1A_U11
GiK_U21	has theoretical knowledge and practical training in creative solving of standard and non-standard engineering tasks and organization-related problems	T1A_U13T1 A_U15
GiK_U22	is capable of identifying and specifying measures designed to update the real estate cadastre	T1A_U14



GiK_U23	has the capacity to make geodetic preparations of projects and set out objects by different surveying techniques	T1A_U15T1 A_U16
GiK_U24	can - in accordance with the standards and after a preliminary economic analysis – make documentation related to the implementation of geodetic preparations	T1A_U16
GiK_U25	has the ability to perform construction-stage and as-built surveys as part of investment surveying services	T1A_U16
GiK_U26	can make use of and interpret technical documentation of buildings and structures	T1A_U16

SOCIAL SKILLS		
GiK_K01	understands the need of continuous education and knows the measures to pursue it (second and third-cycle studies, post-graduate studies), is aware of the importance of professional, social and personal development	T1A_K01
GiK_K02	is aware of the need for self-improvement and professional conduct that is responsible and consistent with the principles of professional ethics	T1A_K01 T1A_K02 T1A_K05 T1A_K07
GiK_K03	realizes the extra-technical effect of various technologies, especially their impact on the environment, and the responsibility for the results	T1A_K02
GiK_K04	respects the principles of intellectual property protection and patent law	T1A_K02
GiK_K05	understands and is aware of the importance of extra-technical aspects and effects of geodetic activity, including its impact on the economy, realizes the significance of the decisions related to this issue	T1A_K02
GiK_K06	is aware of the responsibility for the team tasks performance	T1A_K03
GiK_K07	is capable of cooperation and group working while implementing various engineering projects	T1A_K03
GiK_K08	has the capability of identifying appropriately the priorities aimed at conducting a task set by themselves or others	T1A_K04
GiK_K09	can act in an entrepreneurial manner, since the studies at the Faculty of Geodesy and Cartography provide students with the opportunity to develop optimum organizational skills	T1A_K06



Politechnika Świętokrzyska

WYDZIAŁ INŻYNIERII ŚRODOWISKA, GEOMATYKI I ENERGETYKI

GiK_K10	can pass and explain the acquired knowledge to persons and institutions outside their own professional environment in order to facilitate the circulation of information and decision taking	T1A_K07
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