

3. Educational program

Guarantor of the educational program is Palienko O.O.

3.1. Profile of the educational program "Land Surveying and Cadastre", specialty 193 "Geodesy and Land Surveying"

1 – General Information	
Full name of IHE and structural unit	State University of Trade and Economics Faculty of Restaurant, Hotel and Tourism Business Department of Design and Engineering
Level of higher education and qualification name in the original language	Bachelor's degree specialty "Geodesy and Land Management"
Official name of the educational program	«Land Management and Cadastre»
Compliance with the standard of higher education of MES of Ukraine	Compliance with Standards of Higher Education of MES in Ukraine
Diploma type and volume of the educational program	Bachelor's degree, 240 credits ECTS, training period 3 years 10 months
Accreditation	accredited by the Ministry of Education and Science of Ukraine, till 01.07. 2024
Cycle/Level	NFQ of Ukraine – level 6, FQ-EHEA –first cycle, EQF-LLL – level 6
Preconditions	Having a complete general secondary education/ junior specialist degree
Language(s) of instruction	Ukrainian
Duration	3 years 10 months
Educational Program Link	https://knute.edu.ua
2 – Educational program aim	
Training of highly qualified specialists in geodesy, land management, management of land resources, geosystem monitoring of the environment, management of the state land cadastre and land protection, able to solve non-standard tasks and be able to make management decisions and formulate a business idea for development in	

the field of geodesy and land management.

3 – Characteristics of the educational program

<p>Subject area</p>	<p>Objects of study and activity: objects of land management, topographic-geodetic and cartographic activities, state cadastres and other geo-information systems; methods, technologies and equipment for the collection and analysis of geospatial data, their display on maps and plans; observation of changes in the state of objects in space and time.</p> <p>Learning goals: formation of students' ability to solve complex specialized problems of geodesy and land management.</p> <p>Theoretical content of the subject area: notions, concepts, principles, forms, methods of topographic-geodetic and cartographic activities, land management, monitoring, land protection, land and real estate evaluation; engineering and geodetic surveys and creation of geospatial data.</p> <p>Methods, techniques and technologies: methods of collection, processing, analysis, storage, display, interpretation of geospatial data; methods of field, camera, remote research; technologies of geodetic measurements and searches, land management design, geoinformation technologies.</p> <p>Tools and equipment: tools, devices, equipment and software that are necessary for solving problems of geodesy and land management.</p>
<p>Educational program orientation</p>	<p>The educational and professional bachelor's program in geodesy and land management has an applied orientation of a specialist in land management, geodesy, cadastre and geoinformatics.</p>
<p>The main focus of the educational program</p>	<p>General education in the subject area of knowledge with in-depth training in specialty 193 "Geodesy and Land Management", educational program "Land Management and Cadastre" on planning, rational use, development and protection of land of various categories and purpose in the existing natural, social, economic and ecological conditions ; cadastral accounting of lands and restrictions on their use.</p> <p>Keywords: geodesy, cartography, photogrammetry, remote sensing, geoinformation systems and technologies, land management, land cadastre, land law, land assessment, land management searches, land management design, cadastre of settlements, cadastre of natural resources.</p>

Specific requirements	A characteristic feature of this program is its interdisciplinary nature, which provides graduates with the opportunity to master competencies from various areas of professional activity that are at the intersection of geodesy, economics, cartography, and land management.
4 – Career opportunities and further learning	
Career opportunities	<p>The specialist is able to perform professional work according to the National Classifier of Ukraine "Profession Classifier" DK 003:2010:</p> <p>2148.2 Surveyor; 2148.2 Land engineer; 2213.2 Engineer for reproduction of natural ecosystems; 2213.2 Environmental engineer; 3439 Inventory inspector; 2148.2 Cartographer; 2148.2 Compiler cartographer; 3417 Appraiser; 3417 Appraiser (expert appraisal of property); 3417 Appraiser-expert; 2148.2 Specialist in geosystem monitoring of the environment 2148.2 Specialist in remote sensing of the earth and aerospace monitoring 2148.2 Photogrammetrist 3439 Public inspector for land use and protection</p> <p><i>The graduate is able to perform professional types of work and hold positions in state, regional, and local authorities in matters of land accounting, use and protection of lands; in design and research institutes with land management; in specialized, licensed land management organizations; at enterprises and organizations engaged in economic and legal activities in the field of land relations; in land evaluation organizations and enterprises related to the purchase and sale of land plots; urban planning organizations.</i></p>
Further learning	The possibility of studying under the program of the second cycle of FQ-EHEA, 7th level of EQF-LLL and 7th level of HPK of Ukraine
5 – Training and assessment	
Teaching and learning	<p>Student-centered learning, self-learning, problem-oriented learning.</p> <p>Lectures, practical classes in specialized laboratories, independent work based on textbooks, study guides and lecture notes, training through practical training and</p>

	professional internship, consultations with teachers, preparation for the defense of the qualification work.
Assessment	Written exams, practice; scientific presentations, current control, course projects, qualification work, etc. According to the Regulation on the organization of the educational process of students, the Regulation on the evaluation of students and postgraduates' studying results at DTEU.
6 – Program competences	
Integral Competence (IC)	The ability to solve complex specialized tasks of geodesy and land management and practical problems during professional activity in this field, which involves the application of theoretical knowledge and methods of geodetic, geoinformation, cartographic technologies and systems and cadastre, and land evaluation.
General Competence (GC)	<p>GC01. Ability to learn and master up-to-date knowledge.</p> <p>GC02. Ability to apply knowledge in practical situations.</p> <p>GC03. Ability to plan and manage time.</p> <p>GC04. Ability to communicate in the official language both orally and in writing.</p> <p>GC05. Ability to communicate in a foreign language.</p> <p>GC06. Ability to use information and communication technologies.</p> <p>GC07. Ability to work autonomously.</p> <p>GC08. Ability to work in a team.</p> <p>GC09. Ability to interpersonal interaction.</p> <p>GC10. Ability to perform safe activities.</p> <p>GC11. Awareness of equal opportunities and gender issues.</p> <p>GC12. The ability to realize rights and responsibilities as a member of society; value awareness of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.</p> <p>GC13. The ability to preserve and multiply the moral, cultural, scientific values and achievements of society on the basis of an understanding of history, the patterns of development of the subject area, its place in the general system of knowledge about nature and society, as well as in the development of society, technique and technology, use various types and forms of motor activity for recreation and having a healthy lifestyle.</p>

Professional Competence (PC)

- PC01.** The ability to apply fundamental knowledge to analyze phenomena of natural and man-made origin when performing professional tasks in the field of geodesy and land management.
- PC02.** Ability to apply theories, principles, methods of physical and mathematical, natural, socio-economic, and engineering sciences when performing tasks of geodesy and land management.
- PC03.** Ability to apply regulatory and legal acts, regulatory and technical documents, reference materials in professional activities.
- PC04.** The ability to choose and use effective methods, technologies and equipment for carrying out professional activities in the field of geodesy and land management.
- PC05.** Ability to use modern information, technical and technological support to solve complex issues of geodesy and land management.
- PC06.** Ability to perform remote, ground, field and camera surveys, engineering calculations from the processing of research results, form research results, prepare reports when solving geodesy and land management tasks.
- PC07.** Ability to collect, update, process, critically evaluate, interpret, store, publish and use geospatial data and metadata about objects of natural and man-made origin.
- PC08.** The ability to carry out professional activities in the field of geodesy and land management, taking into account the requirements of professional and civil safety, labor protection, social, ecological, ethical, economic aspects.
- PC09.**Ability to use tools, devices, equipment when performing tasks of geodesy and land management.
- PC10.** Ability to monitor and evaluate land.
- PC11.** Ability to carry out geodetic monitoring of the earth's surface, natural objects, engineering structures.
- PC12.** Ability to carry out technical control and evaluate the quality of topographical, geodetic and cartographic products.
- PC13.**The ability to develop land management and land valuation documentation, cadastral documentation, to fill in data state land, urban planning and other cadastres.
- PC14.**Ability to initiate the concept of business development, formulate a business idea for development in the field of geodesy and land management.

7 – Program learning outcomes (PLO)

- PLO1.** Communicate orally and in writing freely in national and foreign languages on professional activity matters.
- PLO2.** Organize and manage the professional development of individuals and groups.
- PLO3.** Convey information, ideas, problems, solutions, own

experience and arguments to specialists and non-specialists.

PLO4. Know and apply regulatory and legal acts, regulatory and technical documents, reference materials in the field of geodesy and land management and related fields.

PLO5. Apply conceptual knowledge of natural and socio-economic sciences when performing tasks of geodesy and land management.

PLO6. To know the history and peculiarities of the development of geodesy and land management, their place in the general system of knowledge about nature and society.

PLO7. To carry out surveys and search, topographic-geodetic, cartographic, project and project-search works when performing professional tasks in geodesy and land management.

PLO8. Participate in the creation of state geodetic networks and special engineering and geodetic networks, organize and perform topographic and cadastral surveys, geodetic measurements, engineering and geodetic searches for the design, construction and operation of construction objects.

PLO9. Collect, evaluate, interpret and use geospatial data, metadata about objects of natural and man-made origin, apply statistical methods of their analysis to solve specialized problems in the field of geodesy and land management.

PLO10. Select and apply the tools, equipment and software required for remote, terrestrial, field and camera surveys in the field of geodesy and land management.

PLO11. Organize and perform remote, ground, field and camera work in the field of geodesy and land management, prepare the results of the work, prepare relevant reports.

PLO12. Develop land management documentation, cadastral documentation and land valuation documentation using computer technologies, geo-information systems and digital photogrammetry, fill with data state land, urban planning and other cadastres.

PLO13. Plan and perform geodetic, topographic and cadastral surveys, process the obtained results in geoinformation systems.

PLO14. Plan complex professional activities, develop and implement projects in the field of geodesy and land management under conditions of resource and other limitations.

PLO15. Develop and make effective decisions regarding professional activity in the field of geodesy and land management, including conditions of uncertainty.

8 – Resource support for program implementation	
Academic staff	90% of the teaching staff involved in teaching professionally oriented disciplines have scientific degrees in their specialty. Foreign experts from this professional environment are invited to conduct problem lectures.
Facilities	Laboratory of automated design systems. Laboratory of integrated business process management systems. Laboratory of digital technologies. For practical work, the following are available: theodolites, levels, compasses, cypregels, aneroid barometers; GPS navigator; GPS receiver, heliograph, psychrometers, thermographs, weather vane, hygograph, balance meter, actinometers, anemometers, thermometers, barograph, bathometer, galvanometer, probe thermometer, machine. weather station; automatic anemorombometer, RTK receiver, sounder, laser range finder, ground laser scanning device and unmanned aerial vehicle. VR library
Informational, Teaching and Learning Materials	Use of the virtual educational environment of SUTE, software: GraphisoftArchiCAD 23; Autodesk AutoCAD 2022; CorelDraw 2020; SketchUp 19.2.222; Microsoft Vizio 2019; AdobePhotoshop 21.2.4.; AdobeAfterEffects CC 2020; ArcGis (ArcMap), Digitals, Agisoft PhotoScan Pro, Planar, QGIS, PostgreSQL/PostGIS. Author’s developments of the teaching staff.
9 – Academic Mobility	
National Credit Mobility	It is on the usual terms within Ukraine. Short-term training of students for a pre-determined course in other higher education institutions.
International Credit Mobility	It is within the framework of the EU Erasmus + program, based on bilateral agreements between SUTE and higher education institutions of partner countries.
Training of Foreign Students	Training of foreign citizens is possible.

3.2. List of educational program components and their logical order

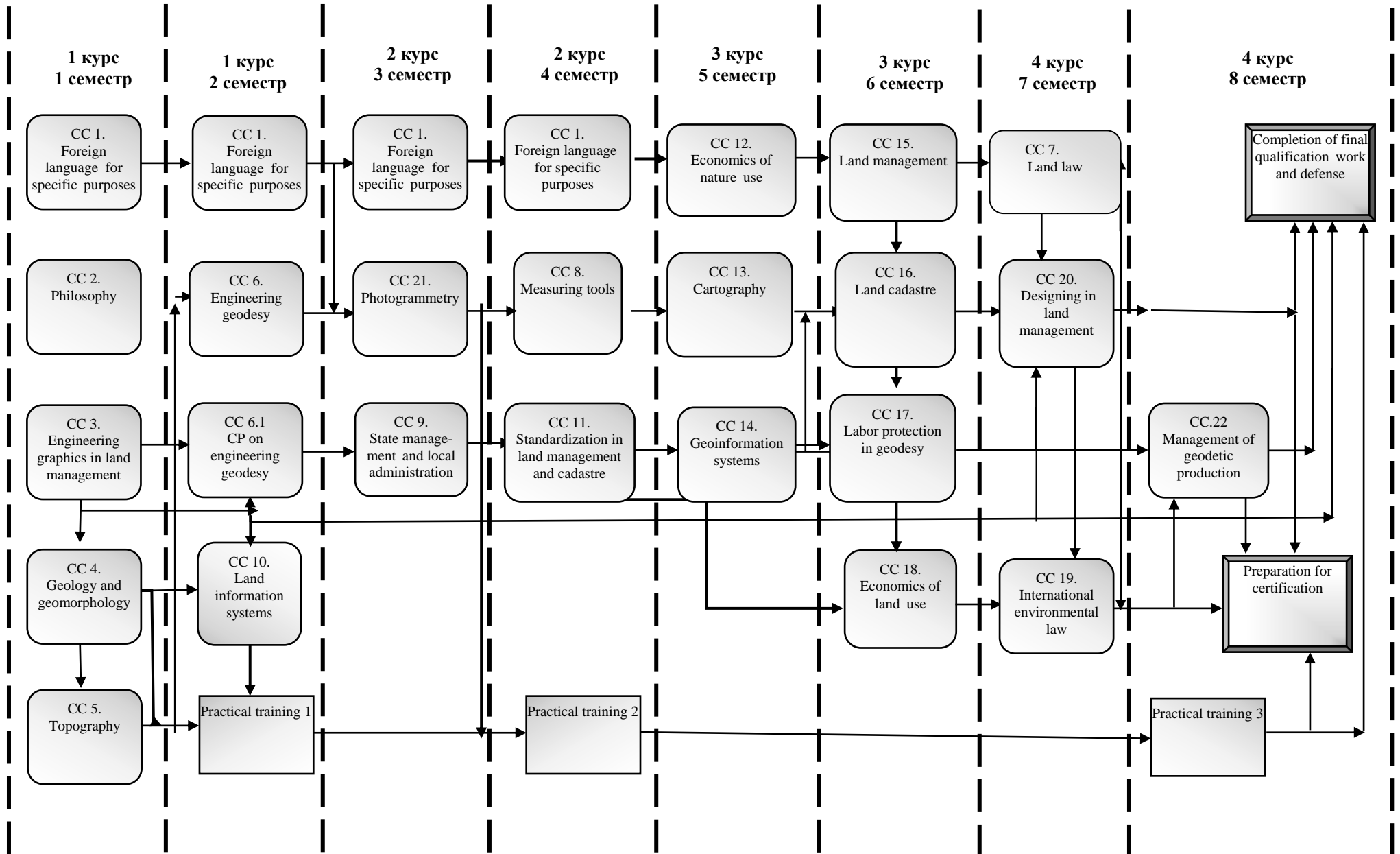
Educational Program components

No	Educational Program components (disciplines, term projects (papers), work-based learning, qualification exam, graduate paper)	Total credits
Compulsory components of EP		
CC 1.	Foreign language for specific purposes	24
CC 2.	Philosophy	6
CC 3.	Engineering graphics in land management	6
CC 4.	Geology and geomorphology	6
CC 5.	Topography	6
CC 6.	Engineering geodesy	6
CC 6.1	CP on engineering geodesy	
CC 7.	Land law	6
CC 8.	Measuring tools	6
CC 9.	State management and local administration	6
CC 10.	Land information systems	6
CC 11.	Standardization in land management and cadastre	6
CC 12.	Economics of nature use	6
CC 13.	Cartography	6
CC 14.	Geoinformation systems	6
CC 15.	Land management	6
CC 16.	Land cadastre	6
CC 17.	Labor protection in geodesy	6
CC 18.	Economics of land use	6
CC 19.	International environmental law	6
CC 20.	Designing in land management	6
CC 21.	Photogrammetry	6
CC 22.	Management of geodetic production	9
Total credits for compulsory components:		153
Optional components of EP		
OC 1.	Agrarian law	6
OC 2.	Administrative services and contracts	6
OC 3.	Life safety	6
OC 4.	Building structures and materials	6
OC 5.	Geomatics in environmental monitoring and assessment of threatening situations	6
OC 6.	Geophysical monitoring of engineering structures	6
OC 7.	Commercial law	6

No	Educational Program components (disciplines, term projects (papers), work-based learning, qualification exam, graduate paper)	Total credits
OC 8.	Decorative dendrology	6
OC 9.	Design	6
OC 10.	Contract law	6
OC 11.	Environmental law	6
OC 12.	Real estate economics	6
OC 13.	Building engineering	6
OC 14.	Information wars	6
OC 15.	Cadastre of settlements	6
OC 16.	Computer design technologies	6
OC 17.	Space law	6
OC 18.	Landscape studies	6
OC 19.	International agrarian law	6
OC 20.	Urban cadastre	6
OC 21.	Municipal law	6
OC 22.	The latest technologies in geodesy and land management	6
OC 23.	Notarial process	6
OC 24.	Basics of cybersecurity	6
OC 25.	International treaties law	6
OC 26.	Psychology of business communication	6
OC 27.	Statistical methods of information processing	6
OC 28.	Recreology	6
OC 29.	Data analysis technologies in agrobusiness	6
OC 30.	Typology of public buildings design	6
OC 31.	City management	6
OC 32.	Management of the rural areas development	6
The total amount of optional components:		60
Practical training		
	Practical training 1	6
	Practical training 2	6
	Practical training 3	6
Total:		18
Attestation		
	Preparation for certification	3
	Completion of final qualification work and defense	6
Total:		9
THE TOTAL AMOUNT OF EDUCATIONAL PROGRAM		240

The form of final control is an exam for all components of the educational program.

3.3. Structural and logical scheme of EP



3.4. Final Assessment

Certification is carried out in the form of public defense of the final qualifying work.

The final qualifying work should involve solving a complex applied problem in the field of geodesy and land management using modern theories, methods, technologies and equipment. The final qualifying work should not contain academic plagiarism, fabrication, falsification and other types of academic dishonesty.

The final qualifying work must be published on the official website of the higher education institution or its subdivision, or in the repository of the higher education institution.

3.5. Program Competences and EP Components Matrix

Components Competences	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11	CC12	CC13	CC14	CC15	CC16	CC17	CC18	CC19	CC20	CC21	CC22
GC 01	+		+	+						+				+								
GC 02	+																					
GC 03																						
GC 04																+	+	+				+
GC 05	+								+													
GC 06						+	+	+						+					+			
GC 07																						
GC 08																						
GC 09	+	+																			+	
GC 10																						
GC 11																						
GC 12		+							+													
GC 13						+					+								+			
SC 01	+	+		+														+				
SC 02	+	+		+														+				
SC 03	+	+			+									+	+							+
SC 04																						
SC 05						+																
SC 06			+			+							+	+	+							
SC 07			+									+	+									
SC 08																				+		
SC 09			+										+						+			
SC 10												+			+							
SC 11			+						+				+		+				+			
SC 12			+			+						+	+	+	+				+			
SC 13												+		+	+			+	+			
SC 14																				+	+	

3.7. Program learning outcomes (PLO) and Compulsory Components Matrix of EP

Components PLO	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12	CC 13	CC 14	CC 15	CC 16	CC 17	CC 18	CC 19	CC 20	CC 21	CC 22
01								+	+			+			+			+				
02	+	+			+					+							+			+		+
03				+	+				+	+	+				+							
04											+				+				+			
05													+			+	+		+	+		
06		+	+			+	+	+	+		+	+		+							+	+
07			+			+					+		+		+			+				
08								+	+					+			+				+	
09						+		+		+								+	+			
10						+									+				+			
11			+			+		+	+	+	+		+		+			+				
12										+		+		+	+			+				
13	+							+			+		+						+			
14																						
15									+		+		+		+			+				

