Mining and Metallurgical Institute named after O.A. Baikonurov
«Mine Surveying and Geodesy» department

EDUCATIONAL PROGRAM
6B07310 - «Land management and cadastre»

Education Area code and classification: 6B07 Engineering Manufacturing and Civil engineering
Training area code and classification: 6B073 Architecture and Civil engineering
Group of educational programs: B075 Cadastre and land Management
NRC level: 6
ORC Level: 6
Duration of training: 4 years
Amount of credits: 240

Almaty 2023

NJSC "KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY named after K.I. SATPAYEV"

Educational program 6B07310 - «Land management and cadastre» was approved at a meeting of the Academic Council of KazNRTU named after K.I.Satpayev.
Protocol № 11 of 28.03.2023
Considered and recommended for approval at a meeting of the Educational and Methodological Council of KazNRTU named after K.I.Satpayev.
Protocol № 11 of 28.03.2023

Educational program 6B07310 - «Land management and cadastre» developed by the academic committee in the direction of «Land management and cadastre»

Full name	Academic degree/ academic title	Position	Place of work	Signature
Chairman of the Academic Committee:				
Kochetova M.A.		director	«Leica Geosystems Kazakhstan»	
Academic staff:				
Orynbassarova E.O.	PhD	head of department	SU	
Aitkazinova Sh.K.	PhD	associate professor	SU	
Nukarbekova Zh.M.	m.s.c.	senior lecturer	SU	
Employer:				
Narbaev M.M.		director	TOO «ALIGeo»	
student:				
Toleutaeva A.		2nd year master`s student		

F KazNRTU 703-05 Educational program

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List of abbreviations and symbols

Table 1 - Used abbreviations

Reduction	Full name
ECTS	European Credit Transfer and Accumulation System
NJSC SU	NJSC Satbayev university
MES RK	Ministry of Education and Science of the Republic of Kazakhstan
TS	Teaching staff
EP	Educational program
RO	Registrar's Office
WC of the EP	Working curriculum of the EP

1. Description of the educational program

The educational program "Land Management and Cadaster" is the first level qualification of the three levels of the higher education system. Due to the qualification module and the final qualifying work of the bachelors of the educational program.

2. The purpose and objectives of the educational program

Goal EP: the purpose of the educational program is to prepare the graduate as a competitive specialist in the field of land management and cadaster, with critical thinking, able to use theoretical and practical information to perform land management and cadastral works in the field of monitoring of land and real estate, cadastral and economic assessment of land and other real estate, regulatory framework in the development of projects.

Tasks EP:

Task 1: preparation of the graduate for organizational activities that exclude negative phenomena in professional activity, development of spiritual values, moral and ethical norms of the individual as a member of society, implementation of the legal and legislative system of the Republic of Kazakhstan with a high level of professional culture, citizenship;

Task 2: preparation of graduates for continuous self-improvement and self-development, mastering new knowledge, skills and abilities in innovative areas of geodesy and cartography;

Task 3: preparation of a graduate with the acquired competencies to perform calculations in the field of land management and cadastre, design technical solutions, participate in the development of technical specifications for topographic and geodetic, aerospace, cartographic work in the area to solve land management based on a modern educational base of the material and technical base;

Task 4: preparation of a graduate, based on the diversity and dynamism of

the catalog of elective disciplines of the curriculum, with a predominance of practical skills in competencies, who is able to perform professional functions within one or more types of activities based on the final results of training, taking into account the specifics of these types of activities, market requirements for organizational and managerial, professional competencies;

Task 5: preparation of a graduate as a competitive specialist in the field of land management and cadastre, including on the basis of an increase in the international aspect in educational, scientific programs, competent in the field of advanced land management technologies and cadastre implementation, and registration of scientific research results.

3. Requirements for the evaluation of learning outcomes of the educational program

Learning outcomes include knowledge, skills and competencies and are defined both for the educational program as a whole and for its individual modules, disciplines or tasks.

The main task at this stage is to select assessment methods and tools for all types of control, with the help of which it is possible to most effectively assess the achievement of planned learning outcomes at the discipline level.

4.Passport of the educational

4.1. General information

№	Field name	Note
1	Code and classification of the field of education	B074 Urban planning, construction work and civil engineering
2	Code and classification of areas of study	6B073 Architecture and civil engineering
3	Group of educational programs	Urban planning, construction works and civil engineering
4	Name of the educational program	6B07310- Land management and cadastre
5	Brief description of the educational program	Educational program «Land management and cadastre» – it is a first level qualification of the three levels of the higher education system.
6	EP purpose:	The purpose of the educational program is to prepare the graduate as a competitive specialist in the field of land management and cadastre, with critical thinking, able to use theoretical and practical information to perform land management and cadastral works in the field of monitoring of land and real estate, cadastral and economic assessment of land and other real estate, regulatory framework in the development of projects
7	EP type:	New EP
8	Level on NQF	6
9	Level on SQF	6
10	EP distinctive features	No
11	List of competencies of the educational program:	15
12	The formed educational outcomes:	1. Apply professional knowledge to minimize negative production factors when conducting land management work, analyze the regulatory framework for labor protection, environmental factors and their classification, chemical laws in professional activities 2. Analyze the theory and practice of entrepreneurship as a system of economic, organizational and legal relations of business structures. Apply professional ethical standards, master the techniques of professional communication. Be able to work in a team, tolerantly perceiving social, ethnic, confessional and cultural differences 3. Analyze and use information about chemical and physical properties of the most important inorganic,

		organic substances, basic information about the theory of substance structure, the doctrine of solutions, information about the laws of organic synthesis, the basics of physical and chemical analysis of substances to understand the theoretical foundations of soil science and soil evaluation 4. Apply the basics of mathematical knowledge in various fields of activity, apply the theory of partial differential equations to solve and study applied problems, form ideas about the implementation of numerical methods for solving boundary value problems using Matlab 5.To instill the ability to acquire new knowledge using modern educational and information technologies, language programs 6. Perform angular and linear measurements on the ground to create topographic maps and plans of various scales, planning and high-altitude justification of large-scale surveys for the design of engineering structures, mathematical processing and evaluation of measurement accuracy, carry out verification and alignment of geodetic instruments, perform survey and center using modern geodetic equipment; extract geographical information from the cartographic image; transform geographical information in a cartographic view 7. Apply GIS technologies to solve land cadastre tasks, including performing cadastral registration in a GIS environment and spatial fixing of land plots 8. Use practical skills in creating and updating digital topographic bases, plans and maps using software, analyze methods of creating digital and electronic maps, as well as automation of cartographic work. Apply the technology of creating digital topographic maps containing logical and mathematical descriptions of mapped objects and the relationship of terrain objects in the form of their combinations, intersections and neighborhood 9. Apply modern geodetic equipment, ground-based and satellite positioning technologies to determine the boundaries of land plots and create cadastral plans 10. Apply remote sensing data of the Earth when solving cadastral and land management tasks; perform aerial photography of land plots using unmanned aerial vehicles; apply GIS technologies when creating cadastral and soil maps, digital models of terrain and objects 11. Use the regulatory framework of cadastral land assessment; demonstrate methods of zoning the territories of cities and rural settlements; perform state

		cadastral land assessment. Interpret the cadastral and market value of the land plot and the results of their examination. Determination of economic efficiency, preparation of budget documentation. 12. To control the observance of the land legislation of the Republic of Kazakhstan by state bodies, individuals, legal entities and officials. To interpret the rules of using land plots, keeping land cadastre and land management, implementation of measures on rational use, state monitoring and protection of lands 13. Perform classification and diagnostics of soils, assessment of the main types of soils according to morphological, chemical and physico-mechanical characteristics. Know the factors of soil fertility deterioration and methods of their elimination, land reclamation and soil protection. Possess methods of soil assessment, calculation of the bonus score and compilation of soil maps using GIS technologies 14. Master the methods of land and real estate management. Organize and conduct cadastral and land surveying work, including the determination of land boundaries using modern surveying equipment. Carry out spatial planning of settlements. To be able to carry out state registration and land records, to draw up an annual statistical report on the condition of land. 15. Explain the basic laws of the territorial physical and geographical differentiation of the geographical envelope, the properties of the natural landscape and its structures, natural and anthropogenic factors that determine the functioning and development of landscapes. Classify natural and anthropogenic landscapes, design landscape maps and maps of physical and geographical zoning using aerospace survey data.
13	Form of study	Daytime
14	Period of study	4 years
15	Volume of the credits	240
16	Language of education	Russian, Kazakh
17	The awarded academic degree	Bachelor
18	Developer(s) and authors:	Department MSaG

4.2. The relationship between the achievability of the formed learning outcomes in the educational program and academic disciplines

№	Name of the discipline	Brief description of the discipline	Number of credits	Formed learning outcomes (codes)														
				LR 1	LR 2	LR3	LR 4	LR 5	LR 6	LR 7	LR 8	LR9	LR10	LR11	LR 12	LR 13	LR 14	LR15
Cycle of general education disciplines Selectable Component																		
1	Fundamentals of anti-corruption culture and law	The course introduces students to the improvement of socio-economic relations of Kazakhstan society, psychological features of corrupt behavior. Special attention is paid to the formation of an anti-corruption culture, legal responsibility for acts of corruption in various spheres. The purpose of studying the discipline «Fundamentals of anti-corruption culture and law» is to increase public and individual legal awareness and legal culture of students, as well as the formation of a knowledge system and a civic position on combating corruption as an antisocial phenomenon. Expected results: to realize the values of moral consciousness and follow moral norms in everyday practice; to work on	5	v	v		v											

		improving the level of moral and legal culture; to use spiritual and moral mechanisms to prevent corruption.																
2	Fundamentals of research methods	The purpose of the discipline "Fundamentals of research methods" is the formation of students' skills and abilities in the field of methodology of scientific knowledge. Brief description of the discipline. Methodological foundations of scientific knowledge. The concept of scientific knowledge. Methods of theoretical and empirical research. Choice of the direction of scientific research. Stages of research work. Research topic and its relevance. Classification, types and tasks of the experiment. Metrological support of experimental studies. Computational experiment. Methods for processing the results of the experiment. Formulation of research results. Presentation of research work.	5	v	v	v												
3	Fundamentals of economics and entrepreneurship	Discipline studies the foundations of economics and entrepreneurial activity from	5	v	v	v												

		the point of view of science and law; features, problematic aspects and development prospects; the theory and practice of entrepreneurship as a system of economic and organizational relations of business structures; The readiness of entrepreneurs for innovative susceptibility. The discipline reveals the content of entrepreneurial activity, the stages of career, qualities, competencies and responsibility of the entrepreneur, theoretical and practical business planning and economic examination of business ideas, as well as the analysis of the risks of innovative development, the introduction of new technologies and technological solutions.																
4	Ecology and life safety	The discipline studies the tasks of ecology as a science, environmental terms, the laws of the functioning of natural systems and aspects of environmental safety in the conditions of labor activity. Monitoring of the environment and management in the field of its safety.	5						**v**					**v**				

		Sources of pollution of atmospheric air, surface, groundwater, soil and ways to solve environmental problems; life safety in the technosphere; natural and man-made emergencies																
Cycle of basic disciplines University component																		
5	Soil assessment	Obtain theoretical knowledge and practical skills in determining and evaluating soils by morphological, chemical and physical-mechanical features. To study the spatial features of the distribution of soils and the degree of their influence on the quality and productivity of soils, the factors of deterioration in soil fertility and methods for their elimination, melioration and soil protection. To master the methods of soil assessment, the calculation of the bonitet score and the compilation of soil maps.	5					**v**					**v**	**v**				
6	Geodetic work in land management	The purpose of teaching the discipline is to teach students methods and techniques for calculating areas and designing land plots, transferring them to nature,	5											**v**	**v**			

		solving geodetic tasks of performing calculations and determining coordinates for transferring land management projects to the area.																
7	Geodetic instruments	To master modern geodetic instruments, methods and methods of performing measurements with them, verification and adjustment of instruments, and the methodology of their research. Master satellite positioning technologies to perform topographic surveys. Learn how to perform topographic and geodetic work with the necessary accuracy to create engineering plans and maps. Be able to independently choose the necessary set of geodetic tools when solving specific tasks.	5						v					v				
8	Geodesy	He will master the basic concepts of the Shape and size of the Earth, about coordinate systems used in geodesy, about the orientation of lines on the terrain, about plans, maps, profiles, about scale, terrain relief, about angular and linear measurements, about altitude measurements, about methods and	6								v	v	v					

		measurements of topographic surveys, about the accuracy of geodetic measurements, the use of geodetic instruments, as well as cameral processing of the geodetic measurements obtained.																
9	State control over the use and protection of lands	To study the conditions for compliance with the land legislation of the Republic of Kazakhstan by state bodies, individuals, legal entities and officials, as well as methods for identifying and eliminating violations of the legislation of the Republic of Kazakhstan. To be able to control the correctness of maintaining the land cadastre and land management, as well as the implementation of measures for the rational use and protection of land.	5											**v**			**v**	
10	Land law	Master knowledge in the field of legal regulation of land relations. Students will know the features of the processes of formation of the system of the legal basis for land management and the cadastre, the legislative framework for land legal relations regarding real estate. They will get acquainted with the issues of	5						**v**					**v**				

		the legal cadastre, the principles of the right to a land plot, real estate, methods of legal regulation of land and property relations in accordance with the legislation of the Republic of Kazakhstan.																
11	Engineering and computer graphics	This course is designed to study the design of products in various industries and industries, including metrological equipment, as well as the creation of design documentation. Forms students' practical skills in performing drawing and graphic works on the basis of the relevant State standards "Unified system of design documentation" using computer graphics programs.	5						v						v			v
12	Engineering development of the territory	The purpose of studying the discipline Providing vocational education that promotes social, academic mobility, demand on the labor market, a successful career, work in public institutions, solving the problems of engineering arrangement of the territory. Providing the bachelor with the knowledge and skills necessary to	5						v			v						

		participate in the development of new design techniques, technology, engineering arrangement of the territory.																
13	Cartography	To study the mathematical basis of maps and types of cartographic projections. Be able to choose and justify the scale, recognize the map projection. Examine the distortions on the maps. To master the cartographic methods of depicting the relief. To study the main sources for compiling thematic and general geographical maps. Master the basic methods of creating maps in ArcGIS.	6												**v**		**v**	
14	Landscape science	To master the structural elements of the landscape shell and the principles of its systemic organization, the natural geographical components of landscapes (geosystems), their unity, interconnections and interdependence. To study the main methods of landscape research and features of the organization of complex geographical research; criteria for assessing territorial ecological situations,	5						**v**									

		landscape systematics and types of landscapes on the Earth. Know the factors, mechanisms and history of the formation of anthropogenic landscapes, as well as the principles of anthropogenic compatibility.																
15	Maths	The purpose of mastering the discipline is to form the theoretical and practical foundations of mathematics and its applications. On the basis of studying the mathematics section, to give students the development of thinking and the achievement of mathematical culture, which is necessary for application in future professional activities. The course is based on the study of mathematical analysis in a volume that allows you to study elementary functions and solve the simplest geometric, physical and other applied problems. The main focus is on differential and integral calculus. The course sections include the differential calculus of functions of one variable, the derivative and differentials,	5						**v**									

		the study of the behavior of functions, complex numbers, and polynomials. Indefinite integrals, their properties and methods of calculation. Certain integrals and their applications. Improper integrals.																
16	Land reclamation	Master theoretical knowledge in the field of regulation of water and associated air, food, thermal and salt regimes of soils in combination with appropriate agricultural technology and landscape features. To study methods for creating and maintaining optimal conditions in the "soil-plant" system to increase the stability of agricultural production and the environmental sustainability of agro-reclamation landscapes, as well as to prevent water and wind erosion of soils and to reclaim technogenic landscapes.	6												v		v		
17	Monitoring of land	The purpose of studying the discipline is the theoretical development of the meaning and role of urban land monitoring in the field of land and natural resources management, land	5						v								v		v

		management and cadastral works, interaction of information systems of land cadastre and land monitoring and includes the following sections: characteristics of urban lands and their features as an object of assessment and monitoring; basic methods of monitoring urban lands; organization of observations monitoring the condition and use of the land fund; remote methods of land monitoring; using remote sensing data for urban land planning.																
18	Chemistry	The course aims to study the structure of the periodic system of elements and the main characteristics of elements and their compounds arising from it. The nomenclature of chemical compounds, basic chemical laws and concepts, as well as their application in solving professional problems are considered. Methods of investigation of physical and chemical properties of substances and the main classes of inorganic compounds.	5											**v**	**v**			**v**

19	Basics of the cadastre	Master the basics of land, water, legal and multifunctional cadastre, as well as the system of accounting, registration and evaluation of land. To study the procedure for carrying out cadastral activities, automate the information system of the state land cadastre, which allows filling out basic land cadastral documents, providing information support for decisions of executive authorities, providing information support to the real estate market, developing market relations, protecting and rationally using land.	5						v					v				
20	Pedology	To master the basic genetic features of the formation of the earth's soil cover, soil classification, knowledge of soil diagnostics and modern concepts about the concepts of soil landscapes, evaluation of the main types of soils according to their agrotechnical characteristics, taking into account the peculiarities of their use and factors contributing to soil salinization.	5									v				v		

21	Remediation and protection of lands from erosion	Master basic knowledge for solving theoretical and practical professional problems in the field of land reclamation and reclamation; find the right solutions to prevent, identify and eliminate violations of the use and protection of land, land and water legislation; develop technical specifications for the design of land reclamation and reclamation works; develop projects for the organization of the territory for engineering and reclamation of the territory.	5						v									
22	Theoretical foundations of land management and cadastre	The study of the discipline consists in the formation of competencies in the tasks of rational use of land and protection, classification of land by suitability. The basics of land management, the functions and role of land as a means of production, accounting and economic condition of land, distribution of land in the Land Fund of the Republic of Kazakhstan, types of land management tasks and design will be studied. Students will know the principles of the territorial	5								v	v	v					

		organization of production and distribution of land by land.																
23	Topographical graphics	The discipline studies the theory and methods of graphic design of cartographic materials used in cartography, geodesy, land management, as well as the use of a graphic software package (CorelDRAW, AutoCAD, etc.). It also includes theoretical knowledge and practical skills in creating a topographic map, a land management plan, compiling and editing, preparing for publication and publishing maps, drawing and design work, for which it is necessary not only to know the materials, drawing accessories and also to combine the methods and techniques of drawing and designing maps.	3						**v**									**v**
24	Land Management control	Master knowledge about land resources to organize the rational use of land and determine measures to reduce the anthropogenic impact on the territory. Learn to apply knowledge of the laws of the country for the legal regulation of land and property relations and control	5								**v**	**v**	**v**					

		over the use of land and real estate. Use knowledge to manage land resources and real estate, as well as in the organization and conduct of cadastral and land management works.																
26	Digital mapping	Get theoretical knowledge and practical skills in using software for creating and updating digital topographic bases, plans and maps. To study the methods of creating digital and electronic maps, as well as the automation of cartographic work. To master the technology of creating digital topographic maps containing logical and mathematical descriptions of mapped objects and the relationships of terrain objects in the form of their combinations, intersections and neighborhood.	5						v					v	v			
27	The inventory of settlements	The study of the discipline consists in the formation of competencies in the tasks of the method of accounting and control over land use, the principles of establishing boundaries and organization of territories of settlements. Students will know the	4								v	v	v					

		features of the processes of formation of cadastral documentation, the stages of the development of plans and projects on the territory of settlements. They will study legal aspects and peculiarities of cadastral valuation taking into account the type of settlement, territorial zoning																
28	Planning of inhabited places	Teaches to understand the basic laws of spatial development of cities and villages, urban planning legislation, norms and rules for urban planning and development; gives the student a systematic view of the placement of architectural objects in an urban environment. To study the prerequisites forming the functional-spatial framework of the populated area; the degree of detail of architectural and spatial solutions.	4						**v**								**v**	
Cycle of major disciplines University component																		
29	Aerospace survey methods	As part of the subject, students will study the theoretical foundations of the application of aerospace survey methods to solve geodesy and	5													**v**	**v**	**v**

		cratography problems. The physical and geometric foundations of aerial surveys, platforms and sensors of space surveys of various ranges will be considered. Students will gain skills in processing aerospace images using various software products, learn how to perform georeferencing of images, classify depicted objects, and create orthophotomaps, digital terrain and relief models.																
30	GIS in land management and cadastre	To gain theoretical knowledge and practical skills of applying geoinformation technologies for works in the tasks of land management. During the course the student will master GIS software for collecting, storing, visualizing and analyzing land surveying and cadastre data, principles of geospatial database formation and design, using tools and algorithms for creating automation processes, integration of GIS and land-information cadastre platforms	5												**v**		**v**	
31	State registration and accounting of lands	To study the basics of registration of property rights to real estate and transactions with it, the patterns and	6								**v**	**v**	**v**					

		prospects for the development of a unified accounting and registration system of the Republic of Kazakhstan. Be able to analyze legal relations and regulations in the field of registration of rights and accounting for real estate, interpret and apply these acts; solve practical problems, applying regulatory legal acts in the field of accounting and registration actions. Possess skills in working with legal acts.																
32	Remote sensing of the earth	To master the methods of processing and analyzing space survey data for solving cartographic and geodetic problems. To study the physical foundations of remote sensing of the Earth, modern sensors operating in active and passive modes, as well as active satellites as carriers of survey systems. Master the technology of processing satellite images, including image enhancement and image decryption methods, and learn how to select remote sensing data for solving engineering problems.	5											**v**	**v**			**v**

33	Land Use Planning	Acquire theoretical knowledge and practical skills that allow you to master the methodology for performing land management design. To study the principles of land management, classification and content of land management projects. Know the assessment of the economic efficiency of design solutions, ways of organizing land use and land ownership, design features of land holdings for various purposes. To master the principles of land management design, taking into account the conditions of various territories.	5														v	v
34	Using 3D modeling to solve geospatial problems	In the course the student will learn the practical use of 3D modeling in the tasks of geospatial sciences. Basic knowledge and skills in geospatial data and immersive technologies will be presented, as well as methods and concepts of creating 3D models. The use of specific tools and technology to create digital models, the ability to analyze, synthesize and design digital models, implementing	5							v							v	v

		workflows to create 3D, ensuring the reliability and detail of the data.																
35	Cadastral zoning, valuation and taxation of land	To study the legal framework for the cadastral valuation of land, to get an idea of the zoning and taxation of land. To master the methods of zoning the territories of cities and rural settlements. To know about the cadastral and market value of the land plot, about the results and examination of the cadastral value of land.	5							v					v			
36	Management of land surveying and cadastral works	To study the features of managing cadastral activities in market conditions, the basics of economic regulation of activities and the economic aspects of creating a new cadastral enterprise. Know the basic requirements of civil and administrative legislation in relation to land cadastral activities. Master the methodology for drawing up a business plan for the organization of land management and cadastral enterprises. Master the methodology of planning and organizing cadastral work, as well as be able to perform	5												v		v	

		calculations to optimize land management and cadastral work.																
37	Organization and planning of land cadastre works	To master the regulation of land relations and land use rights, the calculation of the volume of land management work and the preparation of a balance of personnel; structuring the system of land resources; creation of land management groups; wage fund; calculation of labor income. To study the management of land management and cadastral work, budgeting, costing and acceptance of work, as well as keeping records and monthly reporting on the amount of work performed.	5												**v**	**v**		**v**
38	Photogrammetry	To train specialists in the basics of theoretical and practical knowledge of modern photogrammetric processes, including methods of performing aerial surveys, their cameral processing, and analyzing the accuracy of the materials obtained, as well as methods of using them to create and update topographic maps and plans. Master the processing of aerial images	5													**v**	**v**	**v**

		from UAVs in photogrammetric programs in order to create orthophotoplanes and digital terrain models.																
Cycle of major disciplines Selectable Component																		
39	Web-GIS basics	The discipline is focused on the formation of ideas and understandings about the concepts and technical foundations of web GIS, architecture and components of web GIS, thin and thick clients, types and functions of geospatial web services, optimization of web services, SDI in the web era, solving applied problems with using ArcGIS online and QGIS online. Creation of interactive online maps, “story maps” for solving problems in the field of geodesy, cartography, mine surveying.	3															**v**
40	Web-cartography	The discipline is an alternative discipline to «Web-GIS basics». The concepts of map creation and map material design in a Web-oriented environment will be studied. Gain skills in the use of the basics of computer networks and their mechanisms, and	3												**v**			**v**

		analyze the principles of GIS servers and JavaScript. Master the systems and algorithms of web architecture, in order to design and create interactive maps and web applications in the tasks of land management and cadastre.																

5. Curriculum of the educational program

KAZAKH NATIONAL RESEARCH TECHNICAL UNIVERSITY named after K.I.SATPAYEV

SATBAYEV UNIVERSITY

APPROVED
Chairman of the Management Board-
Rector of Kazakh National Research Technical University named after K.Satpayev
M.M. Begentayev
"01" 12 2022 y.

CURRICULUM
of Educational Program on enrollment for 2023-2024 academic year

Educational program 6B07310 - "Land management and cadastre"
Group of educational programs B075 - "Land management and cadastre"

Form of study: full-time | Duration of study: 4 years | Academic degree: Bachelor of Agriculture

Discipline code	Name of disciplines	Cycle	Total amount in credits	Total hours	classroom volume of lek/lab/pr	SIS (including TSIS) in hours	Form of control	Allocation of face-to-face training based on courses and semesters: I course 1 semester	I course 2 semester	II course 3 semester	II course 4 semester	III course 5 semester	III course 6 semester	IV course 7 semester	IV course 8 semester
CYCLE OF GENERAL EDUCATION DISCIPLINES (GED)															
M-1. Module of language training															
LNG 108	English language	GED, RC	10	300	0/0/6	210	E	5	5						
LNG 104	Kazakh (Russian) language	GED, RC	10	300	0/0/6	210	E	5	5						
M-2. Module of physical training															
KFK 101-104	Physical Culture	GED, RC	8	240	0/0/8	120	Diferodit	2	2	2	2				
M-3. Module of information technology															
CSE 677	Information and communication technologies (in English)	GED, RC	5	150	2/1/0	105	E				5				
M-4. Module of socio-cultural development															
HUM 137	History of Kazakhstan	GED, RC	5	150	1/0/2	105	SE		5						
HUM 132	Philosophy	GED, RC	5	150	1/0/2	105	E				5				
HUM 120	Socio-political knowledge module (sociology, politology)	GED, RC	3	90	1/0/1	60	E				3				
HUM 134	Socio-political knowledge module (culturology, psychology)	GED, RC	5	150	2/0/1	150	E			5					
M-5. Module of anti-corruption culture, ecology and life safety base															
HUM 136	Fundamentals of anti-corruption cultu	GED, CCH	5	150	2/0/1	150	E		5						
MNG 489	Fundamentals of economics and entrepreneurship														
HPP128	Fundamentals of research methods														
CHE 656	Ecology and life safety														
CYCLE OF BASIC DISCIPLINES (BD)															
M-6. Module of physical and mathematical training															
MAT 423	Mathematics	BD, UC	5	150	1/0/2	105	E	5							
CHE 495	Chemistry	BD, UC	5	150	1/1/1	105	E	5							
M-7. Module of basic training															
GEN 429	Engineering and computer graphics	BD, UC	5	150	1/0/2	105	E	5							
MAP570	Topographical graphics	BD, UC	3	90	0/0/2	60	E	3							
MAP536	Geodesy	BD, UC	6	180	2/0/2	105	E		6						
MAP537	Cartography	BD, UC	6	180	2/0/2	105	E			6					
M-8. Module Engineering works															
MAP565	Theoretical foundations of land management and cadastre	BD, UC	5	150	1/0/2	105	E			5					
MAP490	Land Management control	BD, UC	5	150	1/0/2	105	E			5					
MAP566	Basics of the cadastre	BD, UC	5	150	1/0/2	105	E			5					
MAP496	Pedology	BD, UC	5	150	1/0/2	105	E				5				
MAP477	Digital mapping	BD, UC	5	150	1/0/2	105	E				5				
MAP576	Basics of the cadastre	BD, UC	5	150	1/0/2	105	E				5				
MAP481	Geodetic instruments	BD, UC	5	150	1/0/2	105	E					5			
MAP442	Geodetic work in land management	BD, UC	5	150	1/0/2	105	E					5			
GIG136	Water resources management	BD, UC	5	150	1/0/2	105	E					5			
MAP183	Engineering development of the territory	BD, UC	5	150	2/1/0	105	E						5		
MAP450	Soil assessment	BD, UC	5	150	2/1/0	105	E						5		
MAP550	Land reclamation	BD, UC	6	180	2/0/2	120	E						6		
MAP180	Landscape science	BD, UC	5	150	2/0/1	105	E							5	
MAP561	Land law	BD, UC	5	150	1/0/2	105	E							5	
MAP191	State control of use and protection of lands	BD, UC	5	150	1/0/2	105	E								5
MAP402	Remediation and protection of lands from erosion	BD, UC	5	150	1/0/2	105	E								5
MAP559	The inventory of settlements	BD, UC	4	120	1/0/2	75	E								4
MAP416	Planning of inhabited places				1/0/2										
CIV784	Educational practice	BD, UC	2						2						
ЦИКЛ ПРОФИЛИРУЮЩИХ ДИСЦИПЛИН (ПД)															
М-9. Модуль профессиональной деятельности															
MAP483	Aerospace survey methods	PD, UC	5	150	1/0/2	105	E					5			
MAP569	Organization and planning of land cadastre works	PD, UC	5	150	1/0/2	105	E					5			
MAP564	Cadastral zoning, valuation and taxation of land	PD, UC	5	120	1/0/2	75	E					5			
MAP155	Photogrammetry	PD, UC	5	150	1/0/2	105	E						5		
MAP551	State registration and accounting of lands	PD, UC	6	180	2/0/2	120	E						6		
MAP431	Using 3D modeling to solve geospatial problems	PD, UC	5	150	1/0/2	105	E							5	
MAP567	GIS in land management and cadastre	PD, UC	5	150	1/0/2	105	E							5	

MAP568	Management of land surveying and cadastral works	PD, UC	5	150	1/0/2	105	E							5	
MAP425	Remote sensing of the earth	PD, UC	5	150	1/0/2	105	E							5	
MAP420	Land Use Planning	PD, UC	5	150	2/0/1	105	E								5
MAP573	Web-GIS basics	PD, UC	3	120	0/0/2	75	E								3
MAP571	Web-cartography				0/0/2										
AAP143	Production practice I	PD, UC	2								2				
PET506	Production practice II	PD, UC	3										3		
M-10. Module of final attestation															
ECA103	final examination	FA	12												8
M-11. Module of additional types of training															
AAP108	Military affairs	ATT	0												
Total based on UNIVERSITY:								30	30	28	32	30	30	30	30
								60		60		60		60	

Number of credits for the entire period of study					
Cycle code	Cycles of disciplines	Credits			
		required component (RC)	university component (UC)	component of choice (CCH)	Total
GED	Cycle of general education disciplines	51		5	56
BD	Cycle of basic disciplines		116	5	176
PD	Cycle of profile disciplines		51	4	
	Total for theoretical training:				*232*
FA	Final attestation	8			8
	TOTAL:	59	167	14	240

Decision of the Academic Council of Kazntu named after K.Satpayev. Protocol № 5 24 november 2022 y.

Decision of the Educational and Methodological Council of Kazntu named after K.Satpayev. Protocol № 3 17 november 2022 y.

Decision of the Academic Council of the Institute_____. Protocol № 3 от "15" 11 2022 y.

Vice-Rector for Academic Affairs — **B.A.Zhautikov**

Director Mining and Metallurgical Institute named after Baikonurov — **O. K.B. Rysbekov**

Head of the Department " Mine surveying and geodesy" — **E. O. Oryngassarova**

Specialty Council representative from employers — **A.T.Aimenov**