PROFILE OF PROFESSIONAL EDUCATION PROGRAM
“GEOINFORMATION SYSTEMS AND TECHNOLOGIES” SPECIALTIES 193
“GEODESY AND LAND MANAGEMENT”

Common information	
Full name of higher educational institution and structural unit	National Aerospace University named after. M. Ye. Zhukovsky "Kharkiv Aviation Institute" Department of geoinformation technologies and space monitoring of the Earth
Higher educational level	Ступінь вищої освіти – магістр Кваліфікація: магістр з геодезії та землеустрою за освітньою програмою «Геоінформаційні системи і технології» Qualification: Master in geodesy and land management in the geoinformational systems and technologies educational program.
Official name of professional-education program	Геоінформаційні системи і технології Geoinformational Systems and Technologies
Type of diploma and the volume of the educational-professional program	Single 90 Credits ECTS / 1 year 4 months
Presence of accreditation	Certificate of Accreditation: Series ND-IV No. 2143146 issued on December 8, 2010 on the basis of the order of the Ministry of Education and Science of Ukraine dated 07.09.2009 No. 2673-L Validity of the certificate until 01.07.2019. (Primary Accreditation in 2009)
Level of education	Second (master`s) degree
Prerequisites	A person has the right to acquire a masters degree, subject to availability bachelor's degree
Language(s) teaching	The language of teaching is the state language. In order to create conditions for international academic mobility, a decision may be made to teach one or more disciplines in English and / or other foreign languages, while ensuring knowledge of the relevant discipline in the state language.
The term of the educational-professional program	5 years
Internet address of the permanent placement of the description of the educational-professional program	www.khai.edu
The purpose of the educational program	

1 To provide theoretical knowledge and practical skills and skills sufficient for the successful performance of professional duties under the educational-professional program "Geographic information systems and technologies" from the specialty 193 Geodesy and land management and prepare for the successful mastering of more complex programs for researchers.
2 Formation of the personality of a specialist able to use professional-profile knowledge and practical skills for solving innovative tasks in specialty 193 Geodesy and land management.

Characteristics of the professional-education program	
Subject area	Objects of study: theoretical bases, methods, technologies and equipment for the collection and analysis of geospatial data on the shape and size of the Earth, its mapping and plans, the provision of engineering structures (including underground) and the study of geospatial links between objects and structures. Objectives of teaching: formation of the ability of graduates to solve complex specialized tasks and practical problems in the process of professional activity or training, which involves the application of theoretical knowledge in geodesy and land management and technology and equipment in the field of topographic and geodetic production in order to obtain and analyze geospatial data. Theoretical content of the subject area: knowledge of the form and size of the Earth, concepts and principles of conducting topographers, geodesic activities and land cadastre, as well as their information support. Basic knowledge of the natural sciences and in-depth knowledge of mathematics and information technology. Methods and technologies: field, camera and remote methods of research, methods of collecting and processing geospatial data, geoinformation technologies, field and camera technology in the field of geodesy and land management. Instruments and equipment: geodetic, navigational, aerospace equipment, photogrammetric and cartographic systems and complexes, specialized geoinformation, geodetic and photogrammetric software for solution of applied problems in geodesy and land management.
Directing of the educational-professional program	Educational-professional

The main focus of the educational-professional program (specialty)	The educational-professional program establishes the qualification requirements for the social and production activity of graduates of the institution of higher education from the specialty 193 "Geodesy and land management" of the educational degree "Master" and state requirements to the properties and qualities of a person who has received a certain educational level of the corresponding professional orientation for educational and professional the program "Geoinformation Systems and Technologies".
Program features	Students have a practice on different enterprises in various fields of national economy

Eligibility of graduates for employment and further education	
Suitability for employment	Work on a specialty in accordance with the qualification "Master" and may hold positions: 2131.2-database administrator (geo) data; 2148.2 - surveyor, land surveyor engineer; 2148.2 - specialist in remote sensing of the Earth and aerospace monitoring; etc.
Further education	A person has the right to continue education at the third (educational-scientific) level for the degree of a doctor of philosophy.

Academical mobility	
National Credit Mobility	On the basis of bilateral agreements between the National Aerospace University named after. M.E. Zhukovsky "Kharkiv Aviation Institute" and technical institutions of Ukraine. State Enterprise "Antonov" (Contract No. 1/11 dated March 25, 2016, the term of validity is 3 years).
International Credit Mobility	On the basis of bilateral agreements between the National Aerospace University named after. M.Ya. Zhukovsky "Kharkiv Aviation Institute" and educational institutions of partner countries. ERASMUS +, namely academic mobility from the University of the Basque Country and the Ecole Centrale de Nantes.
Teaching foreign applicants for higher education	Training of foreign citizens is provided in the state language or in English. If the training is conducted in the state language, then in certain cases it may be decided to teach one or several disciplines in English and / or other foreign languages, while providing knowledge of the students of the relevant discipline in the state language.

№	Name of the component	Aim and task of the component
	I Semester	
1	Intellectual property	**Aim:** deep knowledge of the legal regulation of relations taking place at the origin, use and protection of objects of intellectual property rights. **Task:** to form students' knowledge of the general provisions of intellectual property law, its institutions, concepts and types of objects and subjects of intellectual property rights, the grounds for the emergence of the conditions and procedure for using its results, order and methods. protection of violated rights.
2	GIS in area management	**Aim:** to prepare students for the decision of organizational, scientific, technical and legal tasks of management of territories with the use of geographic information systems to support decision-making. Acquired practical skills of working with hardware and software GIS and geospatial databases when planning and preparing solutions for management of territories. **Objective:** Students acquire the necessary knowledge and skills in the area of management and decision-making; formation of a systematic approach to the students in setting up and solving the problems of constructing effective territorial management systems; formation of knowledge and skills to work with GIS software for development and support in making managerial decisions.
3	GIS for area management (Course project)	**Aim:** to prepare students for the decision of organizational, scientific, technical and legal tasks of management of territories with the use of geographic information systems to support decision-making. Acquired practical skills of working with hardware and software GIS and geospatial databases when planning and preparing solutions for management of territories. **Objective:** Students acquire the necessary knowledge and skills in the area of management and decision-making; formation of a systematic approach to the students in setting up and solving the problems of constructing effective territorial management systems; formation of knowledge and skills to work with GIS software for development and support in making managerial decisions.
4	GIS for ecosystems	**Aim:** to give basic knowledge about the methods and technologies of thematic processing of primary data describing the current states of the environmental components under the influence of factors of anthropogenic load and practical skills of environmental protection interpretation of geospatial and attribute data. **Task:** acquisition of students the necessary knowledge and skills on modern methods of monitoring the main types of natural ecosystems and factors, their technogenic loading and subject - oriented processing of the data in the environment of GIS software systems and thematic decryption of space images.

5	Scientific foreign language	**Aim:** To provide basic knowledge and skills for oral and written communication in a foreign language areas of geographic information systems and technologies. **Task:** acquisition of students the necessary knowledge, skills and skills for communication in the field of engineering, to be able to explain and characterize facts and phenomena in a foreign language, to establish cause-and-effect relationships between facts and phenomena; to be competent to speak in oral and written form
6	Transport and navigation systems	**Aim:** to prepare students for solving organizational, scientific and technical problems in solving problems of data management of transport and navigation GIS, their processing, adaptation of geographic information systems to solve problems of transport navigation. **Task:** Students acquire the necessary knowledge and skills in studying methods of operational management, tasks of navigation and construction and optimization of routes using GIS.
7	Space meteorology	**Aim:** to provide knowledge on the basics of meteorology, methods and technologies for compiling and analyzing weather maps, aerological diagrams and vertical sections of the atmosphere, as well as studying the peculiarities of formation and characteristics of air masses, and compiling and evaluating weather forecasts. **Task:** the implantation of knowledge on the basis of meteorology, the skills of compilation and analysis of weather maps, aerological diagrams and vertical sections of the atmosphere, compilation and evaluation of weather forecasts.
8	Space monitoring of the Earth	**Aim:** acquisition of basic knowledge about physical subjects by students the basis of space monitoring of the Earth, the features of the shooting equipment in obtaining heterogeneous data of space monitoring and methods of their processing. **Task:** the physical basis of the methods of space monitoring, taking into account the peculiarities of obtaining data and their methods processing
II Semester		
9	Modeling of technological situations using geoinformation technologies	**Aim:** to prepare students for the decision of organizational, scientific, technical tasks on providing knowledge on the basic concepts and definitions, the general provisions of modeling of technogenic situations; the implantation of skills for assessing and analyzing the risks of emergencies, modeling the sources of man-made hazards, as well as mathematical modeling with the use of GIS-technologies for protection against emergencies of objects with massive human presence. **Task:** acquisition of students the necessary knowledge and

		skills in bringing knowledge of the basics of risk analysis and simulation of the repetition of extraordinary technological situations, as well as assessing the use of GIS technologies for the consequences of man-made situations from the positions of the only probabilistic approach; implanting skills in forecasting the consequences of man-made accidents involving explosions, fires, chemical, radiation and hydrodynamic damage to objects, personnel and population; grafting modeling skills using GIS technologies of object security and factors environmental risk.
10	Management and planning GIS projects	**Goal:** based on the documents in force in the organization on the processes of planning and management of GIS projects, using regulatory documents and methodologies, performing analysis documents existing in the organization, develop documentation for planning and managing GIS projects. **Task:** to develop plans, UML diagrams and organizational structures of the project, to compile budget and project budget, identify risks.
11	Modeling of technological situations using geoinformation technologies (Course project)	**Aim:** to prepare students for the decision of organizational, scientific, technical tasks on providing knowledge on the basic concepts and definitions, the general provisions of modeling of technogenic situations; the implantation of skills for assessing and analyzing the risks of emergencies, modeling the sources of man-made hazards, as well as mathematical modeling with the use of GIS-technologies for protection against emergencies of objects with massive human presence. **Task:** acquisition of students the necessary knowledge and skills in bringing knowledge of the basics of risk analysis and simulation of the repetition of extraordinary technological situations, as well as assessing the use of GIS technologies for the consequences of man-made situations from the positions of the only probabilistic approach; implanting skills in forecasting the consequences of man-made accidents involving explosions, fires, chemical, radiation and hydrodynamic damage to objects, personnel and population; grafting modeling skills using GIS technologies of object security and factors environmental risk.
12	GIS for monitoring tasks	**Aim:** to provide knowledge about the main methods of thematic processing of images that characterize the current state of the object of the monitoring and their complex analysis in conjunction with these contact methods and statistical data. **Task:** acquisition of the necessary knowledge and skills by students with the features of the equipment and their interrelationships' with specifics of objects monitoring, features of GIS construction for regional and local types of monitoring on maps of different scales, data processing features images in specialized GIS.
13	High-school psychology and pedagogy	**Aim**: to reveal the peculiarities of the pedagogical process within the framework of the interaction of the student and the teacher in order to form the professional qualities, abilities and

		intellectual abilities. **Task:** to show the characteristics of the pedagogical process of higher education, to reveal the forms of organization of the educational process and the use of pedagogical technologies, to form skills to interact with a student audience
14	Scientific and pedagogical practice	**Aim:** acquisition and consolidation of pedagogical process skills in the framework of the interaction of the student and other students in order to create professional qualities, skills and scientific and pedagogical abilities. **Task:** fixing theoretical knowledge and skills, mastering the methodology of the pedagogical process of higher education, to reveal the forms of organization of the educational process and the use of pedagogical technologies, to form skills interact with the student audience.
15	Cartographical Internet services and portals	**Aim:** to give basic knowledge about modern methods and Internet technology for the development and operation of distributed geodatabase for decision support tasks in the management of territories with application geographic information systems. Acquired practical skills of working with cartographic services and geoportals. **Task:** studying the principles of constructing and operating cartographic services and geoportals for tasks support decision-making in the management of territories.
III Semester		
16	Pre-diploma practice	**Aim:** acquisition and consolidation of skills of independent scientific research and engineering work in the production and research groups of enterprises and organizations. **Task:** consolidation of theoretical knowledge and skills, mastery of the methodology research and experimentation in real conditions of practical activity of specialists of this level, development of creative abilities, ability to apply acquired knowledge in practice, collection of materials necessary for execution qualifying master's thesis.
17	Diploma project	Aim: to determine the level of student's readiness to solve the complex of modern scientific and applied tasks in accordance with the generalized object of activity on the basis of application of the system of theoretical knowledge and practical skills obtained during the whole period of training in accordance with the requirements of the standard of higher education. Task: systematization, consolidation and expansion of theoretical knowledge obtained in the process of training in an educational professional program. "Geoinformation systems and technologies" of the specialist education of the master's degree, and their practical use in solving specific scientific, applied, engineering, economic-social and industrial issues in a certain area of professional activity; development of skills of independent work, mastery of research methods and

		experimentation, physical or mathematical modeling, use of up-to-date information technologies in the process of solving problems that are foreseen for assignments for graduation designing; determination of the level of preparation of the graduate for the requirements of educational degrees characteristics of a specialist, his readiness and ability to work independently in conditions of a market economy, modern production, progress of science, technology and culture.

THE FORM OF ATTESTATION

Certification of graduates for educational and professional program
"Geographic information systems and technologies" from the specialty 193 "Geodesy and land management" is carried out in the form of defense of qualification master's work and ends with the issuance of the document of the established model for awarding him a master's degree with qualification: Master of geodesy and land management for the educational program "Geographic information systems and technologies" .
The certification is carried out openly and publicly.