PROFILE OF EDUCATIONAL PROFESSIONAL PROGRAM
"COSMIC MONITORING OF THE EARTH" FROM SPECIALTIES 103
"SCIENCE ABOUT THE EARTH"

General 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
Qualification	Master in Earth sciences in the «Earth space monitoring» educational program.
The official name is educational and professional programs	Earth space monitoring
Type of diploma and volume Educational and professional program	Single 90 ECTS credits / 1 year 4 months
Accreditation	Accreditation Certificate of Accreditation: Series ND-IV No. 2174802, issued
Cycle / Level	The second (master's) level NRC of Ukraine - level 7
Prerequisites	A person has the right to acquire a masters degree, subject to availability
Language (s) of 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
Validity of the educational-professional program	five years
2 - 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 "Space Monitoring of the Earth" from the specialty 103 Earth Sciences and to prepare for the successful assimilation of more complex programs for researchers. 2 Formation of the personality of a specialist able to use professional-profile knowledge and	

3 - Characteristics of the educational and professional program	
Subject area	**Objects of study**: theoretical bases, methods, technologies and equipment for the collection and analysis of geospatial data about the shape and size of the Earth, the state of the geospheres, their mapping and plans, and the study of geospatial links between objects and structures. **Purpose of training**: formation of graduates ability to solve complex specialized tasks and practical problems in the process of professional activity or study in the field of natural sciences, involving the application of theoretical knowledge in geodesy, geology, geomorphology, meteorology, soil science, geoinformation systems and technologies and equipment in the field of topographic and geodesic production for the purpose of obtaining and analyzing geospatial data. **Theoretical content of the subject area**: knowledge of the form and the size of the Earth, the concepts and principles of conducting topographic and geodetic 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, 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
Orientation of educational-professional program	Educational-professional
The main focus educational-professional program (specialization)	Educational-professional program sets qualification requirements to the social-production activity of graduates of the institution of higher education on specialty 103 "Earth sciences" of 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 direction in the educational-professional program "Space Monitoring of the Earth".
Features of the program	Practice is conducted at enterprises of different branches of the national farms

4 - Eligibility of graduates for employment and further training	
Suitability for employment	Work on a specialty in accordance with the qualification "Master" and may hold positions: 2148.2 - geodesist, specialist in geosystem monitoring of the environment, specialist in remote sensing land and aerospace monitoring; 2442.2 - specialist in environmental management; etc.
Further training	A person has the right to continue education on the third (educational-scientific) level for the degree of doctor of philosophy.
5 - Teaching and evaluation	
Teaching and learning	Student-centered learning, self-study, problem-creative thinking, learning through laboratory practice, dual, distance education, etc. Lectures, multimedia lectures, laboratory works, seminars, practical classes in small groups, independent work on the basis of textbooks and notes, consultations with teachers, preparation of master's work.

6 - Program competencies	
Integral competence	Ability to solve complex specialized problems and practical problems in the professional activity of the subject area of Earth Sciences or in the process of learning using modern theories and methods of studying natural and anthropogenic objects and processes using a complex of interdisciplinary data and under conditions of insufficient information.
General competence (GC)	GC5 - the ability to use information technology; GC 6 - the ability to learn and to be modern educated, to realize the possibility of learning throughout life; GC 7 - the ability to work independently and in a team; ЗК8 - skills of safety of life; GC 9 - the desire to preserve the natural environment and ensure sustainable development of society; GC 10-recognition of moral and ethical aspects of research and the necessity of intellectual honesty, as well as professional codes of conduct.

Professional competence of specialty (PC)	PC1 - the ability to apply knowledge and understanding of the main characteristics, processes, history and composition of the Earth as a natural system; PC2 - the ability to apply basic knowledge of physics, chemistry, biology, ecology, mathematics, information technologies, etc. in studying the Earth and its geosphere; PC3 - ability to use knowledge of general engineering sciences in teaching and professional activity, ability to use their theories, principles and technical approaches; PC4 - the ability to collect, record and analyze data using appropriate methods and technological tools in field and laboratory conditions; PC5 - the ability to choose methods, tools and equipment for the purpose of carrying out professional activities in the field of Earth sciences; PC6 - the ability to integrate field and laboratory observations with the theory in sequence: from observation to recognition, synthesis and modeling. PC7 - ability to be able to use modern geodetic, navigational, geoinformation and photogrammetric software and equipment; PC8 - the ability to independently collect, process, simulate and analyze geospatial data in the field and in the office; PC9 - the ability to aggregate field, camera and distance data on a theoretical basis in order to synthesize new knowledge in the field of Earth sciences; PC10 - the ability to design projects and programs, organize and plan field work, prepare technical reports and draw up field, camera and distance research results; PC11-ability to identify and classify known and register new objects in geospheres, their properties and inherent processes.

LIST OF THE COMPONENT OF THE EDUCATIONAL PROFESSIONAL PROGRAM (CP) AND THEIR LOGICAL CONNECTION

Code 1	Components of the educational program (study disciplines, course 2	Number of credits 3	Form 4
OK1	Intellectual Property	4	credit
OK2	Psychology and pedagogy of higher education	4	credit
OK3	Scientific and pedagogical internship	5	credit
OK4	GIS in the management of territories	7	exam
OK5	GIS in the management of territories	2	dif credit
OK6	Modeling of technogenic situations with using geoinformation technologies	4	exam
OK7	Modeling of technological situations	55	exam
OK8	(KP)	1	credit
OK9	GIS planning and management projects	2 3	protection of qualification
Total volume of mandatory components:		**66.**	
Selective components of OP			
Space Meteorology	Space Meteorology	exam	
Cartographic Internet services and geoportals		exam	
Geophysics	Geophysics	exam	
Scientific foreign language	Scientific foreign	credit	
Scientific foreign language	Scientific foreign	differential	
Space monitoring of the Earth			
GIS in ecosystems	GIS in ecosystems	exam	

GIS in monitoring tasks	GIS exa	exam
Geophysics Geophysics	exam exa	exam
Scientific foreign language Scientific foreign	credit cred	credit
Scientific foreign language Scientific foreign	differ diffe	differential call
Transport and navigation GIS	Transport	exam
Total amount of sample components:		**23,5**
GENERAL SUMMARY OF THE EDUCATIONAL		**90**

STRUCTURE OF THE CURRICULUM FOR THE SEMESTERS AND CONTENT OF THE COMPONENTS

№	Component name	Purpose and task of the component
	I semester	
1	Intelligent property	**Goal:** deep knowledge of knowledge on the legal regulation of relations taking place at the origin, use and protection of objects of intellectual property rights**.** **Objective:** 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, the procedure and methods for the protection of violated rights.
2	GIS in management territories	**Goal:** to prepare students for decision of organizational, scientific, technical and legal tasks of management of territories with application geoinformation systems for decision making support. **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 the development and support of making managerial decisions.

3	GIS in management territories	Goal**:** to prepare students for decision of organizational, scientific, technical and legal tasks of managing the territories from application geographic information systems to support decision-making.
4	Space monitoring of the Earth	Objective: acquisition by students Basic knowledge of physical the basis of space monitoring Earth, features of the shooting apparatus upon receipt heterogeneous space data monitoring and their methods processing

5	Transport and navigation GIS	Goal**:** to prepare students for decision of organizational, scientific and technical problems concerning the decision of tasks of management of data of transport - navigational GIS, their processing, adaptation of geographic information systems for the decision of problems of transport navigation**.** Objective: Students acquire the necessary knowledge and skills in studying methods of operational management, tasks of navigation and construction and optimization of routes using GIS.
6	Modeling man-made situations with using geoinformation technologies	**Goal:** to prepare students for decision of organizational, scientific, tasks on providing knowledge on the basic concepts of modeling of technogenic situations; mathematical modeling using GIS-technologies of protection from emergency situations of objects with massive human presence**.** **Objective:** to prepare students for decision of organizational, scientific, technical problems with providing knowledge of the basic concepts and