MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
National Aerospace University
"Kharkiv Aviation Institute"

APPROVED
the Academic Council of
the National Aerospace University
"Kharkiv Aviation Institute"
Chairman of the Academic Council
_____
«__» 201_, protocol No. _____

EDUCATIONAL AND PROFESSIONAL PROGRAM

Engineering Maintenance of Aircraft and Engines
The first (bachelor's) level of higher education in specialty 272 Aviation Transport

areas of knowledge 27 Transport Services
Qualification: Bachelor in Aviation transport in the educational program "Engineering Maintenance of Aircraft and Engines"

Revision 2

The educational program
is put into operation
from "01" September 2017

Rector of the National Aerospace
University
"Kharkiv Aviation Institute"
_____ M.V. Nechyporuk
order No. 178 from "19" _04_ 2017

Kharkiv 201_

PREFACE

Educational and professional program "Engineering Maintenance of Aircraft and Engines" in the specialty 272 "Aviation transport" for training of bachelors is developed by the working group of the National Aerospace University «Kharkiv Aviation Institute» consisting of:

a) project team:

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1	Project team leader	Orlovskyi M.M.	- Cand. tech. Sciences, Associate Professor, Department of Aircraft and Aircraft Designing Department Helicopter Design
2	Project team members:	Malkov I.V.	- Dr. Tech. Sciences, Professor, Aircraft Designing Department
3		Babushkin O.A.	- Cand. tech. Sciences, Associate Professor, Aircraft Designing Department

b) members of the working group:

1	Shaabdiev S.S.	- Cand. tech. Sciences, Associate Professor, Aircraft Designing Department
2	Serdiukov O.A.	- Senior Lecturer, Aircraft Designing Department
3	Tretiakov Y.V.	- Senior Lecturer, Aircraft Designing Department

Reviews of external stakeholders (if available):

1
2
3

INTRODUCTION

According to Art. 1 "Basic terms and their definitions" of the Law of Ukraine "On Higher Education" from 01.07.2014 No. 1556-VII (as amended) educational program is a system of educational components at the appropriate level of higher education within the specialty that determines the requirements for the level of education persons who can start studying under this program, the list of disciplines and the logical sequence of their study, the number of ECTS credits required for this program, as well as the expected learning outcomes (competencies) that must be mastered by the applicant.

The educational program is used during:

- Accreditation of the educational program, inspection of educational activity by specialty and specialization;
- Development of curriculum, syllabuses and practices;
- Development of diagnostic tools for the quality of higher education;
- Determining the content of training in the system of retraining and advanced training;
- Professional orientation of applicants for the specialty.

The educational and professional program takes into account the requirements of the Law of Ukraine "On Higher Education" from 01.07.2014 No. 1556-VII (as amended), Resolution of the Cabinet of Ministers of Ukraine "On approval of the National Qualifications Framework" from 23.11.2011 № 1341 and establishes:

- Volume and term of study of bachelors;
- General competencies;
- Professional competencies;
- Program learning outcomes;
- The list and volume of academic disciplines for mastering the competencies of the educational-professional program;
- Requirements for the structure of academic disciplines.

Educational and professional program is used for:

- Drawing up curricula and working curricula;
- Formation of individual plans of students;
- Formation of working programs of academic disciplines, practices;
- Determination of the information base for the formation of diagnostic tools;
- Accreditation of educational and professional program;
- Internal and external quality control of training;
- Certification of bachelors in the educational and professional program "Engineering Maintenance of Aircraft and Engines" in the specialty 272 "Aviation Transport".

Users of the educational and professional program:

- Applicants for higher education studying at the National Aerospace University "Kharkiv Aviation Institute";
- Scientific and pedagogical workers who train bachelors according to the educational and professional program "Engineering Maintenance of Aircraft and Engines" in specialty 272 "Aviation transport".
- Examination commission of specialty 272 "Aviation Transport";
- Admissions Committee of the National Aerospace University “Kharkiv

Aviation Institute".

- The educational and professional program extends to the departments of the University involved in the training of bachelor's degree specialists in the educational-professional program "Engineering Maintenance of Aircraft and Engines" in specialty 272 "Aviation Transport".

1 REGULATORY REFERENCES

The educational and professional program is developed on the basis of the following regulations and recommendations:

1.1 Law of Ukraine "On Higher Education". No. 1556-UII dated 01.07.2014 (as amended).

1.2 Resolution of the Cabinet of Ministers of Ukraine "On approval of the National Qualifications Framework" dated 23.11.2011 No. 1341.

1.3 Resolution of the Cabinet of Ministers of Ukraine "On approval of the list of branches of knowledge and specialties in which the training of higher education seekers" from 29.04.2015 No. 266.

1.4 Resolution of the Cabinet of Ministers of Ukraine "On approval of the Regulations on the procedure for exercising the right to academic mobility" dated 12.08.2015 No. 579.

1.5 National Classifier of Ukraine. Classifier of professions DK 003: 2010, approved by the order of Derzhspozhyvstandart of Ukraine dated 28.07.2010 No. 327 (as amended).

1.6 Methodical recommendations for the development of standards of higher education, approved by the higher education sector of the Scientific and Methodological Council of the Ministry of Education and Science of Ukraine Minutes of 29.03.2016 No. 3

1.7 Regulation "On the organization of the educational process" SUYA KHAI-NOV-P/005: 2016 of the National Aerospace University "Kharkiv Aviation Institute", approved by the Academic Council of the University on 18.05.2016, protocol No. 10.

1.8 A Tuning Guide to Formulating Degree Program Profiles Including Program Competences and Program Learning Outcomes. - Bilbao, Groningen and The Hague, 2010.

1.9 A Tuning-AHELO Conceptual Framework of Expected Desired / Learning Outcomes in Engineering. OECD Education Working Papers, No. 60, OECD Publishing 2011.http://dx.doi.org/10.1787/5kghtchn8mbn-en

1.10 National Qualifications Framework. Appendix to the Resolution of the Cabinet of Ministers of Ukraine of November 23, 2011 No. 1324.

1.11 Development of educational programs. Methodical recommendations / Authors: V.M. Zakharchenko, V.I. Lugovyi, Y.M. Rashkevich, Z.V. Talanova / Ed. V.G. Kremen. - Kyiv: State Enterprise "Priorities", 2014. - 120 p.

1.12 Order of the Ministry of Education and Science of Ukraine "On the peculiarities of the introduction of the list of branches of knowledge and specialties for which higher education is approved, approved by the Cabinet of Ministers of Ukraine dated April 29, 2015 No. 266" dated 06.11.2015 No. 1151.

1.13 Classification of economic activities: DK 009: 2010. - Valid from 01.01.2012. - (National Classifier of Ukraine).

1.14 Classifier of professions: DK 003: 2010. - Valid from 01.11.2010. - (National Classifier of Ukraine).

1.15 National educational glossary: higher education / 2nd ed., Revised. I extra. / Author: V.M. Zakharchenko, S.A. Kalashnikov, V.I. Lugovyi, A.V. Stavytskyi, Y.M. Rashkevich, Z.V. Talanova / Ed. V.G. Kremen. _ Kyiv: Pleiades Publishing House LLC, 2014. - 100 p.

1.16 Draft Standard of higher education for bachelor's degree in specialty 272 Aviation Transport / 2017. - 18 p.

2 Profile of the educational program "Engineering Maintenance of Aircraft and Engines" in specialty 272 "Aviation Transport"

1 - General information	
Full name of the higher educational institution and structural subdivision	National Aerospace University “Kharkiv Aviation Institute” Aircraft Designing Department
Degree of higher education and title of qualification in the original language	Degree of higher education - bachelor Qualification: Bachelor in Aviation Transport according to the educational program «Engineering Maintenance of Aircraft and Engines»
The official name of the educational and professional program	Engineering Maintenance of Aircraft and Engines
Type of diploma and scope of educational and professional program	On the basis of complete general secondary education with a term of study of 11 years, the scope of the bachelor's educational program is 240 ECTS credits. On the basis of complete general secondary education with a term of study of 12 years, the scope of the bachelor's educational program is 240 ECTS credits. Based on the undergraduate degree, the scope of the bachelor's degree program is 180 ECTS credits. At least 50 percent of the educational program should be directed to the acquisition of general and special (professional) competencies in the specialty defined by the standard of higher education, as well as 25 percent - at the student's choice.
Availability of accreditation	Certificate of accreditation: Series UD number 21008335, based on the order of the Ministry of Education and Science of Ukraine from ….No. 1565 from 19.12.2016. Expiration date 01.07.2022.
Cycle/level	NQF of Ukraine - level 6, FQ-EHEA - the first cycle, EQF-LL - level 6
Prerequisites	Availability of complete general secondary education, according to the results of external independent evaluation. On the basis of a junior specialist (junior bachelor).
Language (s) of training	The language of training is the state language. In order to create conditions for international academic mobility, it may be decided to teach one or more disciplines in English and/or other foreign languages, while ensuring that students in the relevant discipline know the state language. At the request of higher education students, the higher education institution creates opportunities for them to learn the language of a national minority to the extent that allows them to carry out professional activities in the chosen field using this language.
Validity of the educational	Before the introduction of a new educational program

and professional program	
Internet address of the permanent placement of the description of the educational and professional program	http://k103.info
2 - The purpose of the educational program	
Training of bachelors who have deep knowledge, as well as basic and professional competencies and are able to correctly independently set and solve problems of scientific and practical and research activities in the field of engineering maintenance of aircraft and engines	
3 - Characteristics of the educational and professional program	
Subject area (field of study, specialty, specialization)	Field of study 27 "Transport Services" Sdecialty 272 "Aviation Transport" Engineering Maintenance of Aircraft and Engines
Orientation of the educational and professional program	Educational and professional
The main focus of the educational and professional program (specialization)	Educational and professional program sets qualification requirements for social and production activities of graduates of higher education institutions in the specialty 272 "Aviation Transport" of educational "bachelor's" degree and state requirements for the properties and qualities of a person who has obtained a certain educational level of the relevant professional direction in the educational and professional program "Engineering Maintenance of Aircraft and Engines".
Features of the program	Practical training is carried out at aviation enterprises
4 - Suitability of graduates for employment and further study	
Suitability for employment	Bachelors in aviation transport under the educational program "Engineering Maintenance of Aircraft and Engines" can hold positions in the field of civil aviation at airlines: aviation technician (mechanic) for the operation of aircraft (aircraft systems)
Further training	A person has the right to continue education at the second level of higher education.
5 - Teaching and assessment	
Teaching and learning	Student-centered learning, self-study, problem-oriented learning aimed at the development of critical and creative thinking, learning through laboratory practice, dual, distance education and more. Lectures, multimedia lectures, laboratory works, seminars, practical group classes, independent work on the basis of textbooks and abstracts, consultations with teachers, preparation of a bachelor's thesis project
Evaluation	Written exams and assessments, course projects and works, reports on practices, presentations, current (modular) control, bachelor's thesis project and its defense
6 - Program competencies	
Integral competence	Ability to solve complex specialized problems and practical problems in the engineering maintenance of aircraft and engines or in the learning process, which involves the application of certain theories and methods of science and is characterized by complexity and uncertainty of conditions.
General	GC1 Ability to abstract thinking, analysis and synthesis.

competence (GC)	GC2 Ability to apply knowledge in practical situations. GC3 Knowledge and understanding of the subject area and understanding of professional activity. GC4 Ability to communicate in the state language both orally and in writing. GC5 Ability to communicate in a foreign language. GC6 Ability to adapt and act in a new situation. GC7 Ability to make informed decisions. GC8 Ability to work in a team. GC9 Safe activity skills. GC10 Ability to assess and ensure the quality of work performed.
Professional competencies of the specialty (PC)	PC1 Ability to ensure the safety and cost-effectiveness of aircraft flights. PC2 Knowledge and understanding of the subject area of risk management. PC3 Ability to choose the best solutions when planning actions in special situations. PC4 Ability to provide safety and health at the work site. PC5 Ability to develop proposals and implement measures to minimize the impact of the human factor on flight safety. PC6 Ability to apply mathematical and computer information technologies to optimize the management of aviation transport enterprises. PC7 Skills to work with regulations, reference books and other sources of information governing the activities of aviation transport. PC8 Ability to participate in a set of planned and preventive works to ensure the serviceability, efficiency and readiness of aircraft to effectively use them for their intended purpose. PC9 Ability to perform professional primary skills, including metalwork, manufacture and repair of simple parts, assembly of components to ensure the serviceability, efficiency and readiness of aircraft for their intended use and with the lowest operating costs. PC10 Ability to maintain technical documentation and compile established reports according to approved forms. PC11 Ability to solve problems in planning the maintenance of aircraft, operational reliability, regularity of flights. PC12 Skills to analyze the reliability of aircraft, the experience of its maintenance, planning measures to prevent accidents and incidents, failures and damage to aircraft in order to maintain the airworthiness of aircraft and ensure flight safety.
7 - Program learning outcomes	
	PLO1 Ensure the safety and cost-effectiveness of aircraft flights. PLO2 Analyze the risks that arise during the operation of the aviation transport system. PLO3 Choose the best solutions when planning actions in special situations. PLO4 Provide safety and labor protection at the work site. PLO5 Develop proposals and implement measures to minimize the impact of the human factor on flight safety. PLO6 Apply computer and telecommunication tools and technologies to optimize the management of aviation transport enterprises.

	PLO7 Summarize information on regulatory documentation, reference literature and other sources of information governing the activities of aviation transport. PLO8 Ensure a set of planned and preventive work on aircraft in order to maintain its readiness for effective use as intended. PLO9 Ensure the implementation of professional primary skills, including metalwork, manufacture and repair of simple parts, assembly of components to ensure the serviceability, efficiency and readiness of aircraft for their intended use and with the lowest operating costs. PLO10 Analyze the technical documentation and established reporting according to the approved forms, including the accounting of service life and technical condition of aircraft. PLO11 To plan the solution of tasks on maintenance of aircraft, operational reliability, regularity of flights, organization, information and hardware support of production processes for maintenance and repair of aircraft. PLO12 Analyze the reliability of aircraft, the experience of its maintenance and plan measures to prevent aviation events and incidents, failures and damage to aircraft in order to maintain the airworthiness of aircraft.
8 - Resource support for program implementation	
Staffing	Research and teaching staff providing educational and professional qualification program, meet the profile and in the direction of the disciplines taught, have the necessary experience of pedagogical work and experience of practical work, have scientific degrees and/or academic title and meet the licensing requirements
Material and technical support	The educational process takes place in lecture halls, classrooms for laboratories and laboratories equipped with public projection and media equipment, computers and the necessary specialized laboratory equipment. Material and technical support allows to fully ensure the educational process throughout the training cycle of the educational and professional program. The condition of the premises is certified by sanitary and technical passports that comply with existing regulations
Information and teaching and learning materials	Fund of the Scientific and Technical Library of the National Aerospace University "Kharkiv Aviation Institute" contains a complete information support of all educational components of the educational and professional program "Engineering Maintenance of Aircraft and Engines", both on traditional media, and audio and video editions, CDs, DVDs, online electronic documents. The educational process is provided by educational and methodical complexes of disciplines both in a printed form, and in an electronic form.
9 - Academic mobility	
National credit mobility	Based on bilateral agreements between the National Aerospace University "Kharkiv Aviation Institute" and domestic higher educational institutions-partners and enterprises of the aviation industry in Ukraine
International credit mobility	Based on bilateral agreements between the National Aerospace University "Kharkiv Aviation Institute" and higher educational institutions-partners of foreign countries
Training of foreign applicants for higher education	Education of foreign citizens is carried out in the state or English languages

3 List of components of educational and professional program and their logical sequence

3.1 List of EP components

EPC code	Components of the educational program (academic disciplines, course projects (works), practices, qualification work)	Number of credits	Form of final control
1	2	3	4
Mandatory components of the EP			
CYCLE OF GENERAL TRAINING			
MC1	Language training (Ukrainian language)	15	exam
MC2	Philosophy	3	assessment
MC3	Engineering materials science	3	exam
MC4	Higher mathematics	17.5	exam
MC5	Electrical engineering	3	assessment
MC6	Descriptive geometry	3	assessment
MC7	Programming and calculation methods	4.5	exam
MC8	Theoretical mechanics	8.5	exam
MC9	Thermodynamics and Heat transfer	4	assessment
MC10	Physics	14.5	exam
MC11	Chemistry and Basics of ecology	3	assessment
CYCLE OF PROFESSIONAL TRAINING			
MC12	Engineering and computer graphics	3	assessment
MC13	Aviation materials science	4	assessment
MC14	Interchangeability and standardization	3	assessment
MC15	Machine parts and basics of design	6	exam
MC16	Machine parts and basics of design (CP)	2	differential assessment
MC17	Mechanics of materials and structures	9.5	exam
MC18	Mechanisms and machinery theory	4	exam
MC19	Mechanisms and machinery theory (CP)	2	differential assessment
MC20	Internship	3	assessment
MC21	Bachelor's thesis (project)	9	exam
MC22	Educational practice	3	assessment
MC23	Language practice	6	assessment
The total amount of mandatory components:		**133.5**	
Selective components of EP			
Selective block 1			
SB1.1	Engineering basics of aerospace engineering	3	assessment
SB1.2	Flight dynamics	3.5	exam
SB1.3	Flight dynamics (CW)	2	differential assessment
SB1.4	Fundamentals of technologies of aircraft manufacturing and repair	4.5	exam
SB1.5	Fundamentals of technologies of aircraft manufacturing and repair (CP)	2	differential assessment
SB1.6	Aircraft maintenance	8	exam
SB1.7	Aircraft maintenance (CW)	1.5	differential assessment

EPC code	Components of the educational program (academic disciplines, course projects (works), practices, qualification work)	Number of credits	Form of final control
1	2	3	4
SB1.8	Aerohydrodynamics	4.5	exam
SB1.9	Aviation fuel and lubricant materials	3	assessment
SB1.10	Aviation ground equipment	4.5	exam
SB1.11	Aviation legislation	3	assessment
SB1.12	Hydraulics	4.5	exam
SB1.13	Aviation hydraulics and hydropneumatic devices	5.5	exam
SB1.14	Aircraft computer systems of life cycle support	6	exam
SB1.15	Construction of aircraft	6.5	exam
SB1.16	Design and strength of aircraft engines	4	exam
SB1.17	Design and strength of aircraft	4	assessment
SB1.18	Human factor	4	assessment
SB1.19	Modeling of aircraft operational processes and systems	4	exam
SB1.20	Fundamentals of flight safety	3	assessment
SB1.21	Fundamentals of aviation reliability	3	assessment
SB1.22	Instruments and aviation electronic systems	3	assessment
SB1.23	Life time and durability of aircraft	3	exam
SB1.24	Automatic control systems for gas turbine engines	4	exam
SB1.25	Theory of heat engines	4.5	exam
SB1.26	Technology of manufacturing and repair of aircraft engines	4.5	exam
SB1.27	Operation of airports and their technologies	3.5	exam
Selective block 2			
SB2.1	Ground service technologies	3	assessment
SB2.2	Aircraft diagnostics	3.5	exam
SB2.3	Flight dynamics (CW)	2	differential assessment
SB2.4	Management of aircraft maintenance processes	4.5	exam
SB2.5	Fundamentals of technologies of aircraft manufacturing and repair (CP)	2	differential assessment
SB2.6	Fundamentals of tribology	8	exam
SB2.7	Aircraft maintenance	8	differential assessment
SB2.8	Aircraft maintenance (CW)	1.5	exam
SB2.9	Aircraft certification	3	assessment
SB2.10	Probabilistic and statistical models of aircraft maintenance	4.5	exam
SB2.11	Efficiency of aircraft maintenance processes	3	assessment
SB2.12	Aerohydrodynamics	4.5	exam
SB2.13	Aircraft hydraulics and hydropneumatic devices	5.5	exam
SB2.14	Flight dynamics	6	exam
SB2.15	Aircraft computer systems of life cycle support	6.5	exam
SB2.16	Construction of aircraft	4	exam
SB2.17	Design and strength of aircraft engines	4	assessment
SB2.18	Design and strength of aircraft	4	assessment
SB2.19	Operational viability of the aircraft structure	4	exam
SB1.20	Modeling of aircraft operational processes and systems	3	assessment

EPC code	Components of the educational program (academic disciplines, course projects (works), practices, qualification work)	Number of credits	Form of final control
1	2	3	4
SB1.21	Fundamentals of flight safety	3	assessment
SB1.22	Fundamentals of aircraft reliability	3	assessment
SB1.23	Fundamentals of technical diagnostics	3	exam
SB1.24	Promising composite materials	4	exam
SB1.25	Continued airworthiness certification	4.5	exam
SB1.26	Theory of heat engines	4.5	exam
SB1.27	Aircraft engine control systems	3.5	exam
The total amount of selective components:		**106.5**	
TOTAL VOLUME OF THE EDUCATIONAL PROGRAM		**240**	

3.2 Structural and logical scheme of EP

The structural and logical scheme of the educational program reflects the sequence of studying its components and is given in Annex A (scheme). The scheme contains mandatory components and components of selective block 1, because the block for this educational program is the basic (priority). If another selective block is selected by the applicant for higher education, the individual trajectory of study is determined and an individual plan is drawn up.

3.3 The structure of the curriculum by semesters and the content of EP components

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
Semester I					
1	MC1	Language training (Ukrainian language)	**Goal:** provide knowledge of phonology, phonetics, morphology, syntax and stylistics, basic vocabulary of household and professional topics and basic language tools for communication. **Task:**effective implementation of acts of oral and written communication during professional communication with foreign partners: in dialogic and monologue speech; in listening and writing (abstracting; annotation; business correspondence).	GC1 GC2 GC5 GC8	
2	MC4	Higher mathematics	**Goal:** mastering methods that allow analytical research of mathematical models (correctness, completeness, complexity, stability of solutions, etc.). **Task**: study of mathematical quantities, theories, methods, which in phenomena, processes, bodies make it possible to investigate the most general properties, abstracting from those properties that are not essential.	GC1	PC6
3	MC12	Engineering and computer graphics	**Goal:** mastering the basic provisions of geometric modeling, methods of depicting spatial forms on the plane, standards of design documentation, mathematical and algorithmic foundations of computer graphics. **Task:** development of spatial representation and imagination, constructive and geometric thinking, ability to analyze and synthesize spatial forms and relationships, study methods of constructing various geometric spatial objects (mainly surfaces), ways to obtain their drawings at the level of graphic models and the ability to solve these drawings of tasks related to spatial objects and their dependencies.	GC1 GC3	
4	MC10	Physics	**Goal:** to form students' ideas about the modern physical picture of the world, to provide knowledge about the most important principles and laws that determine the structure and simplest forms of motion of matter, thus preparing them for a quality study of general technical and special disciplines. **Task:** study of basic patterns, methods and models for further use in specialties.	GC1 GC3	

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
5	MC7	Programming and calculation methods	**Goal**: acquisition by students of knowledge about the basic characteristics of the personal computer, functions and structure of the WINDOWS operating system, functions of software shells of OS; formation of skills of skilled work with the text editor Word; study of the full cycle of program development, which includes model building, algorithm development, writing program code in an integrated environment of high-level algorithmic languages, namely editing, compiling, executing, testing and documenting programs. The purpose of training is also to provide students with knowledge of computational mathematics and the basics of mathematical modeling, developing skills to adapt standard algorithms to numerical schemes for solving complex applications, effective use of special applications - MathCAD, MATLAB to solve various engineering problems. **Task:** 1. To study methods of writing programs, basic algorithms, data structures. 2. Master the full cycle of program development, which includes developing a model and an algorithm, writing program code, documenting and testing the program. 3. To study the basic algorithms of modern theory of computational methods-solutions of equations, systems of algebraic equations, numerical methods of integration, approximation of functions, solutions of ordinary differential equations, systems of ordinary differential equations. Master the ways of using modern specialized application packages.	GC1 GC2 GC3	PC6
6	MC8	Theoretical mechanics	**Goal:** master the laws of classical mechanics and methods of analytical study of the mechanical motion of a material point, solid and mechanical system **Task:** study of basic concepts and laws of statics, kinematics and dynamics for use in calculations of motion and equilibrium of mechanical systems.	GC1 GC3	
7	MC23	Language practice	**Goal:** to provide knowledge of phonology, phonetics, morphology, syntax and stylistics, basic vocabulary of household and professional topics and basic language tools for communication.	GC1 GC2 GC5 GC8	

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			Task:effective implementation of acts of oral and written communication during professional communication with foreign partners: in dialogic and monologue speech; in listening and writing (abstracting; annotation; business correspondence).		
II semester					
8	MC1	Language training (Ukrainian language)	**Goal:** to provide knowledge of phonology, phonetics, morphology, syntax and stylistics, basic vocabulary of household and professional topics and basic language tools for communication. **Task:**effective implementation of acts of oral and written communication during professional communication with foreign partners: in dialogic and monologue speech; in listening and writing (abstracting; annotation; business correspondence).	GC1 GC2 GC5 GC8	
9	SB1.1	Engineering basics of aerospace engineering	**Goal**: to give the necessary level of knowledge on the purpose and general structure of the main units and systems of aerospace engineering. **Task:** provide the necessary level of knowledge about the purpose and general structure of aerospace engineering, and its basic units and systems.	GC2 GC3 GC6	
10	MC4	Higher mathematics	**Goal:** mastering methods that allow analytical research of mathematical models (correctness, completeness, complexity, stability of solutions, etc.). **Task**: study of mathematical quantities, theories, methods, which in phenomena, processes, bodies make it possible to investigate the most general properties, abstracting from those properties that are not essential.	GC1	PC6
11	MC5	Electrical engineering	**Goal:** formation of students' knowledge of electrical engineering laws; electrical terminology and symbolism; methods of analysis of electric, magnetic and electronic circuits; principles of operation, designs, properties, areas of application of basic electrical and electronic equipment, electrical measuring instruments; ability to experimentally determine the parameters and characteristics of typical electric machines; practical skills of activation and operation of electrical appliances and machines. **Task**: formation a set of knowledge, skills and ideas of students on the basic principles of construction and application of DC electric	GC1 GC2 GC7	

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			machines and elements of technical electronics, their application in practical activities in the specialty.		
12	MC6	Descriptive geometry	**Goal:** mastering the basic provisions of geometric modeling, methods of depicting spatial forms on the plane, standards of design documentation, mathematical and algorithmic foundations of computer graphics. **Task:** development of spatial representation and imagination, constructive and geometric thinking, ability to analyze and synthesize spatial forms and relationships, study methods of constructing various geometric spatial objects (mainly surfaces), ways to obtain their drawings at the level of graphic models and the ability to solve tasks related to spatial objects and their dependencies based on these drawings.	GC1 GC3	
13	MC10	Physics	**Goal:** to form students' ideas about the modern physical picture of the world, to provide knowledge about the most important principles and laws that determine the structure and simplest forms of motion of matter, thus preparing them for a quality study of general technical and special disciplines. **Task:** study of basic patterns, methods and models for further use in specialties.	GC1 GC3	
14	MC11	Chemistry and basics of ecology	**Goal:** acquisition by students of the general idea of structure of environmental objects, mastering of the theory and practice of methods of the chemical and physicochemical analysis. **Task:** Acquisition by students of knowledge about features of chemical composition of natural objects; natural processes that occur with the participation of natural components, in the presence of pollutants; system of monitoring control over the condition of natural objects; indicators that determine the quality of the environment; features of chemical control of natural objects; determination of mechanisms of chemical reactions.	GC1 GC3	MC15
III semester					
15	MC6	Engineering materials science	**Goal:**Study of functional properties of metallic and non-metallic structural materials and methods of their evaluation. Mastering the patterns of formation of properties and performance characteristics of materials in the process of their production, as well as in the production of parts or structural elements by influencing the composition, structure, shape	GC1 GC2 GC10	

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			and location of structural elements and other possible factors. **Task:** Acquisition of some skills in the selection of structural materials based on the analysis of operating conditions of parts, determining the loads on each part, analysis of production conditions of parts and opportunities to improve properties in the production process, and analysis of costs and availability of materials.		
16	MC8	Higher mathematics	**Goal:** mastering methods that allow analytical research of mathematical models (correctness, completeness, complexity, stability of solutions, etc.). **Task**: study of mathematical quantities, theories, methods, which in phenomena, processes, bodies make it possible to investigate the most general properties, abstracting from those properties that are not essential.	GC1	PC6
17	MC23	Language practice	**Goal:** provide knowledge of phonology, phonetics, morphology, syntax and stylistics, basic vocabulary of household and professional topics and basic language tools for communication. **Task:**effective implementation of acts of oral and written communication during professional communication with foreign partners: in dialogic and monologue speech; in listening and writing (abstracting; annotation; business correspondence).	GC1 GC2 GC5 GC8	
18	MC1	Language training (Ukrainian language)	**Goal:** provide knowledge of phonology, phonetics, morphology, syntax and stylistics, basic vocabulary of household and professional topics and basic language tools for communication. **Task:**effective implementation of acts of oral and written communication during professional communication with foreign partners: in dialogic and monologue speech; in listening and writing (abstracting; annotation; business correspondence).	GC1 GC2 GC5 GC8	
19	SB1.14	Aircraft computer systems of life cycle support	**Goal:** to form students' scientific base and practical knowledge of principles and provisions of technologies of continuous information support of life cycle (LC) of aircraft (A), standards of CALS-technologies, main components of CALS-technologies and approaches to their implementation, languages and software implementing CALS -technologies and issues of practical application of CALS-technologies on the example of computer	GC1 GC2 GC3 GC7 GC10	

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			integrated CAD/CAM COMPASS system. **Task**: the main tasks of the discipline are to teach students the theoretical foundations and scientific methods of using technologies of continuous information support of the aircraft life cycle, as well as practical acquaintance of students with the main aspects of creating electronic models of products.		
20	MC17	Mechanics of materials and structures	**Goal:** to give knowledge about modern engineering methods of calculations of structural elements and constructions on durability, rigidity and stability. **Task:** be able to correctly choose the calculation scheme and apply the appropriate method of calculating structural elements, abstracting from those properties of a rigid body that are not essential in terms of stretching (compression), bending, torsion, complex deformation under static and cyclic and dynamic loading.	GC1 GC2 GC3 GC7	
21	MC8	Theoretical mechanics	**Goal:** master the laws of classical mechanics and methods of analytical study of the mechanical motion of a material point, solid and mechanical system **Task:** study of basic concepts and laws of statics, kinematics and dynamics for use in calculations of motion and equilibrium of mechanical systems.	GC1 GC3	
22	MC18	Mechanisms and machinery theory	**Goal:** formation of a system of knowledge on the theory and methodology of analysis and synthesis of typical mechanisms of aerospace engineering. **Task:** mastering the basic concepts of kinematic pairs, kinematic chains of typical mechanisms; methods of calculation of flat mechanisms; kinematic and force analyzes of mechanisms; methods and algorithms for calculating the kinematic, dynamic characteristics of mechanisms	GC1 GC2 GC3	
IV semester					
23	MC13	Thermodyna-mics and heat transfer	**Goal**: acquisition of knowledge, skills and abilities that will allow to develop simplified semantic and mathematical models of thermodynamics and heat transfer processes in aerospace objects. **Task**: practical realization of possibilities of thermodynamic analysis and optimization of processes of transformation of energy types, definition of the maximum possible efficiency of power installations and the basic sources of working capacity loss, calculation of a temperature condition of the simplest	GC1 GC3 GC6 GC10	

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			geometrical analogues of aerospace engineering elements.		
24	MC20	Mechanics of materials and structures	**Goal:** to give knowledge about modern engineering methods of calculations of structural elements and constructions on durability, rigidity and stability. **Task:** be able to correctly choose the calculation scheme and apply the appropriate method of calculating structural elements, abstracting from those properties of a rigid body that are not essential in terms of stretching (compression), bending, torsion, complex deformation under static and cyclic and dynamic loading.	GC1 GC2 GC3 GC7	
25	MC21	Mechanisms and machinery theory	**Goal:** formation of a system of knowledge on the theory and methodology of analysis and synthesis of typical mechanisms of aerospace engineering. **Task:** mastering the basic concepts of kinematic pairs, kinematic chains of typical mechanisms; methods of calculation of flat mechanisms; kinematic and force analyzes of mechanisms; methods and algorithms for calculating the kinematic, dynamic characteristics of mechanisms	GC1 GC2 GC3	
26	MC31	Mechanisms and machinery theory (CP)	**Goal:** consolidation of knowledge gained during the study of the course "Mechanisms and machinery theory", gaining experience and practical skills in solving problems related to the analysis and synthesis of typical mechanisms of aerospace engineering. **Task:** calculation of one of the kinematic pairs, kinematic circuits of a typical mechanism; kinematic and force analysis of the mechanism; calculation of kinematic, dynamic characteristics of the mechanism.	GC1 GC2 GC3	
27	MC25	Introductory practice	**Goal:** practical mastering by students of the works performed at operational maintenance of airplane. **Task:** – Consolidation of theoretical knowledge obtained during the study of the course "Design of Aircraft"; – Study of the design of a regional aircraft and its functional systems; – Acquaintance with the aircraft engine design; – Acquaintance with the organization of aviation engineering service, maintenance, operational and technical documentation, safety during maintenance; – Acquaintance with typical works that are performed in the process of maintenance of	GC1 GC2 GC3 GC6 GC8 GC9 GC10	PC1 PC4

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			aircraft and engines to ensure safety, regularity and efficiency of flights.		
28	MC35	Operation of airports and airport technologies	**Goal**: acquaintance with the airport as a functional system, classification of airports, rules of their certification, basic airport technologies and their technological equipment, etc. **Task**: - Study of the main functions of the airport as a whole and its individual services; - Research of production processes and technologies of aviation transportation services; study of airport management systems as system.	GC3 GC9 GC10	PC1 PC2 PC3 PC4 PC11
29	SB1.1	Aviation fuel and lubricant materials	**Goal:** to gain knowledge about the chemical nature, composition, means of production and features of physicochemical and operational properties of aviation and rocket fuels, lubricants and special (technical) liquids (fuel), as well as the rules of their rational use. **Task:** The main tasks of studying the discipline "Aviation fuel and lubricant materials" are: - General method of chemotology - Scientific and engineering analysis of the relationship between technology and fuel used, in operation and at the stages of development and testing of new equipment and new fuel.	GC3 GC9 GC10	PC4 PC7 PC8 PC10
30	SB1.2	Aviation ground equipment	**Goal** - mastering the basic theoretical provisions on the principles of construction and operation of aviation ground equipment, which ensure the effective use of aviation ground equipment during aircraft ground maintenance, flight support, labor protection and the environment. **Task** - mastering the scientific base in the field of principles of construction and operation of aviation ground equipment; consolidation of previously acquired knowledge in disciplines: introduction to the profession; mechanics of materials and structures; providing knowledge for the study of disciplines: technology of ground maintenance of aircraft, aircraft maintenance; intensification of education and preparation of the student for the choice of field and specialty of practical activity in new market conditions.	GC3 GC9	PC4 PC8
31	SB1.4	Aerohydro-dynamics	**Goal:** mastering the basic principles of aerohydrodynamics and gaining knowledge about the laws of motion of liquids and gases and the use of these laws to calculate the flow of bodies. **Task:** to study the influence of different geometric and kinematic characteristics on the hydrodynamic parameters of the flow, as well as the influence of geometric parameters on the	GC1	PC11

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			operation of pumps and units of aircraft systems; the nature of the aerodynamic forces acting on the aircraft in flight.		
V semester					
32	MC5	Philosophy	**Goal:** providing knowledge of philosophy as a worldview of man, or a set of views on the world as a whole and man's attitude to this world, in the understanding of ontological, epistemological, axiological, praxeological and social problems of existence. **Task:** - To form the ability of conscious, free, and hence responsible choice of personal worldviews, the ability to conduct worldview dialogue; - To show the patterns of genesis and formation of specific historical forms of philosophy; - To achieve students' mastery of philosophical ways of thinking, basic philosophical principles, mastering the worldview and humanistic content of philosophy, mastering an independent style of thinking; - To cultivate the ability to apply the acquired knowledge in their own lives, interpersonal relationships, scientific and practical activities and in the analysis of general problems of today; - To promote the assertion of humanism in society and the spiritual development of the individual.	GC1 GC2 GC6 GC7 GC10	
33	MC18	Machine parts and basics of design	**Purpose:** students' acquisition of knowledge and skills, necessary for the calculation and design of parts and components of aerospace engineering. **Task:** Study of bases of calculations and designing, criteria of serviceability of parts and joints of machines, mastering of methods of calculation of various parts, acquaintance with modern methods of designing.	GC1 GC3 GC7 GC9	
34	MC27	Machine parts and basics of design (CP)	**Goal:** acquisition by students of knowledge and skills, consolidation of knowledge gained during the study of the course "Machine parts and basics of design", acquisition of experience and practical skills in solving problems related to the design of parts and components of aerospace technology **Task:** calculation and design of one of the components of aircraft engines, helicopters, design of wiring of technological equipment, which is used in their manufacture.	GC1 GC3 GC7 GC9	

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
35	SB1.5	Aircraft hydraulics and hydropneuma-tic devices	**Goal:** formation of a system of knowledge on the basics of fluid dynamics and performance of hydraulic calculations. **Task:** gaining knowledge of the basics of fluid dynamics and skills in solving specific engineering problems of design, hydraulic and pneumatic devices and systems.	GC1 GC2 GC3	
36	SB1.7	Aircraft computer systems of life cycle support	**Goal:** to form students' scientific base and practical knowledge of principles and provisions of technologies of continuous information support of life cycle (LC) of aircraft, standards of CALS-technologies, main components of CALS-technologies and approaches to their implementation, languages and software implementing CALS -technologies and issues of practical application of CALS-technologies on the example of computer integrated CAD/CAM COMPASS system. **Task**: the main tasks of the discipline are to teach students the theoretical foundations and scientific methods of using technologies of continuous information support of the life cycle (LC) of aircraft, as well as practical acquaintance of students with the main aspects of creating electronic models of products.	GC1 GC2 GC3 GC7 GC10	PC1 PC2 PC6 PC7 PC10
37	SB1.10	Design and strength of aircraft	**Goal:** to give students knowledge about the design of aircraft on the load of the structural elements of the airframe and aircraft systems on ways to reduce the weight of the structure and ensure strength during design and operation. **Task:** study of the discipline: to give the required level of knowledge about the load of the airframe structure and aircraft systems, the operation of units under load, their design features and strength calculations in the airframe structure, their load-carrying structures, functional assumptions and design and technological implementation.	GC1 GC3 GC7	PC7
38	SB1.19	Technology of manufac-turing and repair of aircraft engines	**Goal**: to form knowledge and skills that allow to scientifically solve problems in the production, repair and restoration of aircraft using the achievements of science in the field of technology and production. **Task**: have an idea of: - Theoretical foundations of production and repair of aircraft engines; - Modeling of technological and production processes of restoration and repair of aircraft; - Features of aircraft repair in modern economic conditions; - System of automated design of aircraft repair processes.	GC1 GC3 GC8	PC9

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
VI semester					
39	MCZ	Selective humanities discipline	**Goal:** assimilation of political world and domestic processes, regularities of development and functioning of political science, its place and role in a life of a society. **Task:** study the essence, history, theory and methodology of political activity and behavior, be able to navigate the main world political schools, concepts and directions, know and be able to characterize Ukrainian political doctrines, have an idea of the essence of political life, political relations and processes, the object and the subject of politics.	GC1 GC2 GC6 GC7 GC8 GC10	
40	MC22	Internship	**Goal:** expansion and consolidation of knowledge acquired by students in the process of studying at the university on the basis of the study of aircraft, equipment and technologies and organization of maintenance of aircraft in the aviation enterprise. **Task:** – Consolidation of theoretical knowledge obtained by students in the study of theoretical courses; – Study of the design of regional aircraft and its functional systems; – Acquaintance with the design of aircraft engine; – Acquaintance with the organization of aviation engineering service, maintenance, operational and technical documentation, safety during maintenance; – Acquaintance with typical works are performed in the process of aircraft and their engines' maintenance to ensure safety, regularity and economy of flights.	GC1 GC2 GC3 GC6 GC8 GC9 GC10	PC1 PC3 PC4 PC7 PC8 PC9 PC10 PC11 PC12
41	MC28	Flight dynamics (CW)	**Goal:** mastering the theoretical foundations, principles of flight, design and equipment of aircraft, which is the basis for the analysis of aerodynamic forces and moments acting on the aircraft during its movement in the air of aerodynamic processes, aerodynamic characteristics, flight performances, the impact of external operating conditions, the impact of the aircraft systems' equipment state on the ability to perform flights and flight safety. **Task**: mastering by students of knowledge on calculation of the general aerodynamic characteristics, flight performances, aircraft design; thrust and lifting force; general characteristics of aircraft flight controls taking into account the influence of external conditions	GC1 GC3	PC1

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			of operational factors, basic requirements of airworthiness standards and aviation rules.		
42	MC30	Fundamen-tals of technologies of aircraft manufactu-ring and repair	**Goal:** to form knowledge and skills that allow to scientifically solve modern issues of aircraft production and repair. **Task:** have an idea of: - Theoretical foundations aircraft production and repair technologies; - Technical control in the aircraft manufacture; - Installation and testing of aircraft systems.	GC1 GC2 GC3 GC7 GC8 GC9 GC10	PC4 PC7 PC8 PC10
43	MC34	Aircraft ground maintenance technologies	**Goal**: mastering the basic provisions for the organization of groung equipment maintenance, maintenance and repair of aircraft using groung equipment, maintaining a given level of reliability and flight safety. **Task:**mastering the scientific base in the field of organization and implementation of processes of maintenance of aviation transport; consolidation of previously acquired knowledge in disciplines: basics of aviation and astronautics; computer science and basics of programming; aerodynamics and flight dynamics; theory, design of aircraft and aircraft engines, etc., mastering the practical skills of maintenance and safe performance of standard maintenance works; intensification of education and preparation of the student for the choice of field and specialty of practical activity in new market conditions.	GC1 GC2 GC3 GC6 GC7 GC8 GC9 GC10	PC3 PC4 PC7 PC8 PC9 PC12
44	SB1.6	Flight dynamics	**Goal:** coverage of theoretical foundations, principles of flight, design and equipment of aircraft, which is the basis for the analysis of aerodynamic forces and moments acting on the aircraft during its movement in the air of aerodynamic processes, aerodynamic characteristics, flight perfomances, the impact of external conditions of operational factors, the impact of the aircraft systems' equipment state on the ability to perform flights and flight safety. **Task**: mastering by students: - Basic concepts and terminology of the aviation industry; - General aerodynamic characteristics, flight performances, aircraft design; - General principles of creation of thrust and lifting force; - General characteristics of aircraft flight controls; - Aircraft airframe design; - Purpose of aircraft functional schemes;	GC1 GC3	PC1

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			- The influence of external conditions of operational factors, the basic requirements of airworthiness standards and aviation rules.		
45	SB1.12	Modeling of aircraft operational processes and systems	**Goal**: to gain knowledge about modern methods of designing, constructing and modeling of aerospace objects with the help of computer integrated CAD/CAM/CAE systems and skills of working in the CAD/CAM/CAE CATIA V5 system. **Task:** the study of the discipline is to provide students with knowledge about the modern use of methods of designing aircraft structures using the CAD/CAM/CAE CATIA V5 system.	GC1 GC2 GC3 GC7	PC6 PC11
46	SB1.17	Aircraft life time and durability	**Goal**: to form students' scientific base, theoretical and practical knowledge in the field of organization and implementation of processes aimed at continuing, preserving and restoring the airworthiness of aircraft according to the criterion of life time and fatigue life of their structures. **Task**: students gain knowledge about modern methods of calculation of the life time of aircraft structures; on ensuring and continuing fatigue life, survivability and life time in general of aircraft; acquaintance with the main provisions of the "Air Code of Ukraine", Standards of airworthiness of aircraft, certification of aircraft; consolidation of previously acquired knowledge in the following disciplines: basics of aerospace engineering; theoretical mechanics; general design of aircraft and aircraft engines, aircraft maintenance, etc; activating the motivation to study and prepare the student to choose a place of practical activity in the new market conditions.	GC1 GC2 GC3 GC7 GC10	PC1 PC2 PC6 PC7 PC10
47	SB1.18	Theory of heat engines	**Goal:**to study heat engines used in the aviation industry; master modern methods of technological calculations and the choice of equipment for aircraft with different target direction; to promote the expansion of horizons, the manifestation of independence in the implementation of calculations and feasibility study of technical decisions. **Task:** study of the conceptual apparatus of the discipline, basic theoretical principles and methods, skills to apply theoretical knowledge to solve practical problems.	GC1 GC3 GC7	PC7
VII semester					
48	MC19	Business economics	**Goal:** to give the necessary knowledge about the economic activity of the enterprise in order to organize the production (provision of services) with maximum economic efficiency.	GC1 GC2 GC3	PC1

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			Task: formation of modern managerial thinking and a system of special knowledge in the field of management and economics of enterprise, as well as practical skills of analysis and planning of indicators of economic and production activities.		
49	MC29	Fundamen-tals of technologies of aircraft manufactu-ring and repair (CP)	**Goal:** to consolidate knowledge and skills that allow to scientifically solve modern issues of aircraft production and repair. **Task:** to consolidate theoretical knowledge on the basics of technology for the production and repair of aircraft, technical control in the manufacture of aircraft, installation and testing of aircraft systems.	GC1 GC2 GC3 GC7 GC8 GC9 GC10	PC4 PC7 PC8 PC10
50	MC32	Aircraft maintenance	**Goal**: mastering the basic provisions for the organization of technical operation, maintenance and repair of aircraft, maintaining a given level of reliability and flight safety. **Task:**mastering the scientific base in the field of organization and implementation of processes of maintenance of aviation transport; consolidation of previously acquired knowledge in the following disciplines: basics of aviation and astronautics; computer science and basics of programming; aerodynamics and flight dynamics; theory, design of aircraft and engines, etc., mastering the practical skills of maintenance and safe performance of standard maintenance works; intensification of education and preparation of the student for the choice of field and specialty of practical activity in new market conditions.	GC1 GC2 GC3 GC6 GC7 GC8 GC9 GC10	PC3 PC4 PC7 PC8 PC10 PC11 PC12
51	SB1.3	Aviation legislation	**Goal:** to provide the necessary level of knowledge and provide practical knowledge in the field of organization of the regulatory framework of methods and procedures for airworthiness management at the national, regional and international levels. **Task:** study of the discipline "Aviation Legislation" allows you to get acquainted with the basic principles and methods of international and state regulation of civil aviation, aimed at continuing airworthiness and flight safety.	GC2 GC3 GC7	PC1 PC3 PC4 PC7 PC10
52	SB1.8	Aircraft design	**Goal:** to obtain initial knowledge of the design of airframe and functional systems of medium transport aircraft operated in civil aviation; to obtain initial knowledge on maintenance of aircraft and PP for further acquisition of practical skills in their maintenance. **Task:**to obtain initial knowledge of the design of airframe and functional systems of medium	GC1 GC3 GC7	PC7

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			transport aircraft operated in civil aviation; to obtain initial knowledge on maintenance of aircraft and PP for further acquisition of practical skills in their maintenance.		
53	SB1.9	Design and strength of aircraft engines	**Goal:** to give students knowledge about the structural elements of the aircraft airframe, about ways to reduce the weight of the structure, to ensure strength during design and operation. **Task:** to provide knowledge about the structural elements of the aircraft airframe, about ways to reduce the weight of the structure, to ensure strength during design and operation.	GC1 GC3 GC7	PC7
54	SB1.16	Instruments and aviation electronic systems	**Goal:** gain knowledge of the basic laws of nature that underlie the operation of electronic systems, the principles of operation and maintenance of electronic systems of aircraft in operation; gain knowledge of maintenance for further acquisition of practical skills. **Task:** research on the basic laws of nature that underlie the operation of electronic systems, the principles of operation and maintenance of electronic systems of aircraft in operation.	GC1 GC2 GC3	
VIII semester					
55	MC7	Health and safety, labor protection and civil protection	**Goal:** formation of a system of theoretical and applied knowledge on legal, economic and organizational issues of creating safe working conditions, human protection at work. **Task:** ensuring a guarantee of health and efficiency of workers in the production conditions of specific industries through effective management of labor protection and the formation of responsibility of officials and professionals for collective and personal safety; assimilation by students of the newest theories, methods and technologies for forecasting emergencies, developing their models, determining the level of risk and justification of a set of measures aimed at preventing emergencies, protection of personnel, population, material and cultural values in emergencies, localization and elimination of their consequences.	GC8 GC9 GC10	
56	MC32	Aircraft maintenance	**Goal**: mastering the basic provisions for the organization of technical operation, maintenance and repair of aircraft, maintaining a given level of reliability and flight safety. **Task:** mastering the scientific base in the field of organization and implementation of processes of maintenance of aviation transport; consolidation of previously acquired knowledge in the following disciplines: basics of aviation	GC1 GC2 GC3 GC6 GC7 GC8 GC9	PC3 PC4 PC7 PC8 PC9 PC10 PC11

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			and astronautics; computer science and basics of programming; aerodynamics and flight dynamics; theory, design of aircraft and engines, etc., mastering the practical skills of maintenance and safe performance of standard maintenance works; intensification of education and preparation of the student for the choice of field and specialty of practical activity in new market conditions.	GC10	PC12
57	MC33	Aircraft maintenance (CW)	**Goal:** mastering the basic provisions for the organization of technical operation, maintenance and repair of aircraft, maintaining a given level of reliability and flight safety. **Task:**mastering the scientific base in the field of organization and implementation of processes of maintenance of aviation transport; consolidation of previously acquired knowledge in the following disciplines: basics of aviation and astronautics; computer science and basics of programming; aerodynamics and flight dynamics; theory, design of aircraft and engines, etc., mastering the practical skills of maintenance and safe performance of standard maintenance work; intensification of education and preparation of the student for the choice of branch and specialty of practical activity in new market conditions.	GC1 GC2 GC3 GC6 GC7 GC8 GC9 GC10	PC3 PC4 PC7 PC8 PC10 PC11 PC12
58	SB1.11	Human factor	**Goal:** to provide a stock of theoretical knowledge and practical skills in the field of determining the causes of aviation accidents and comprehensive development of measures to prevent them. **Task:** study of the discipline "Human Factor" provides knowledge about: - The need to ensure a high level of reliability and survivability of aircraft; requirements of aviation rules in this area to aircraft for various purposes; - Basic terms and definitions of reliability and survivability of aircraft, types of aviation events and special flight situations; - Features of the use of this set of knowledge in different areas of ensuring the functioning of the aviation complex; - Complex of external causes of aviation events (getting into unsettled flight conditions, etc.) - Complex of internal causes of aviation events (failures and damage to aircraft, etc.) - In details - a set of causes covered by the term "Human FACTOR"; - Methods and organizational measures to	GC1 GC2 GC3 GC6 GC8 GC9	PC5

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			prevent the negative impact of the human factor on the safety of operation of aircraft systems for various purposes. - Methods of multicriteria analysis and methods of processing and agreeing on the opinions of several experts		
59	SB1.13	Fundamen-tals of flight safety	**Goal:** to form students' scientific base and practical knowledge in the field of integrated safety at all stages of the life cycle of aircraft, starting from the first steps of project concept development, covering the following stages of sketch and working design, manufacture, testing and, most importantly, aircraft maintenance. **Task**: the main objectives of the discipline are to teach students the theoretical foundations and scientific methods of flight safety in civil aviation on the basis of integrated approach, the main aspects of aviation security throughout the life cycle of aircraft.	GC2 GC3 GC9	PC1 PC2 PC3 PC4 PC5 PC12
60	SB1.14	Fundamen-tals of aircraft reliability	**Goal**: the purpose of teaching the discipline "Fundamentals of Aircraft Reliability" is to provide a stock of theoretical knowledge and practical skills in the field of ensuring, determining and controlling the reliability of aircraft. **Task**: the main tasks of studying the discipline "Fundamentals of Aircraft Reliability " are to give knowledge about: - The need to ensure a high level of reliability of the aircraft; requirements of aviation rules in this area to aircraft for various purposes; basic terms and definitions of reliability and survivability of aircraft; - Constructive, technological and operational methods to increase the reliability and survivability of airframe elements and systems of aircraft; - Laws of distribution of discrete and continuous random variables, numerical characteristics of distribution, their integral estimates; basic calculation methods of analysis of reliability and survivability of aircraft; - Principles of software development used to determine the reliability and survivability of aircraft; - Basic experimental methods for determining the aircraft reliability and survivability, the main processes that occur in aircraft damage and their consequences.	GC1 GC2 GC3 GC7	PC2 PC8 PC11 PC12
61	SB1.15	Fundamen-tals of technical	**Goal:** formation of students' competencies related to the basics of determining the technical condition of aircraft and engines in general, their	GC1 GC2 GC3	PC1 PC2 PC7

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
		diagnostics	elements and functional systems. **Task:** knowledge formation: - On the general concepts of technical diagnosis of aircraft and engines; - Methods of solving diagnostic problems; - Characteristics of the main elements of the diagnostic system; - Methods and means of diagnosing aircraft and engines in general, their elements and functional systems.	GC6 GC7 GC8	PC8 PC10 PC11 PC12
62	MC23	Bachelor' thesis (project)	**Goal:** acquisition by students of skills of the independent decision of complex engineering problems concerning improvement of aircraft maintenance and repair. **Task:** systematization of theoretical knowledge acquired in the process of studying at the University, and the acquisition of practical skills: - Continuing the airworthiness of the aircraft and ensuring flight safety, taking into account the certification requirements for CA facilities; - Engineering and statistical analysis of the state and forecasting of operational and technical perfection and reliability of newly created aircraft; - Analysis of the organization of maintenance and repair of aircraft; - Assessment of the perfection of the technology of aircraft maintenance and repair, diagnosing its technical condition; - Development of production processes and technical documentation for maintenance and repair of aircraft; - Development of constructive and technological measures to increase the reliability and operational and repair manufacturability of the aircraft; - Development of organizational and technical measures to increase the efficiency of maintenance (repair) of aircraft, reduce operating costs, save fuel and energy resources; - Generalization and use of best practices of civil aviation enterprises in flight engineering and technical support; - Work with scientific and technical literature; - Performance of calculation and graphic works; - Assessment of technical and economic efficiency of engineering decisions; - Generalization of the results of design and qualified defense of the bachelor's thesis. - Designing joints for units and systems of modern aircraft, the ability to use modern	GC1 GC3 GC7 GC9	PC1 PC5 PC10 PC11 PC12

No.	EPC code	Name of EP component	Purpose and objectives of EP component	Formation of competencies	
				General	Profe-ssional
			capabilities of computer systems; - Preparing students to work in the aviation industry as a junior mechanical engineer, training and identifying their abilities to continue their studies in senior courses according to the plans of a specialist or master.		

4 Form of certification of applicants for higher education

Full-time graduates of the educational and professional program "Engineering Maintenance of Aircraft and Engines" in specialty 272 "Aviation Transport" are certified by defensing their bachelor's thesis.

Graduates of correspondence form of education under the educational and professional program "Engineering Maintenance of Aircraft and Engines" in the specialty 272 "Aviation Transport" are certified by means of an attestation exam.

Certification ends with the issuance of a standard document on the award of bachelor's degree to graduates with the qualification: Bachelor in Aviation Transport in the educational program "Engineering Maintenance of Aircraft and Engines."

Certification is carried out openly and publicly.

5 Matrix of correspondence of program competencies to educational program components

Components of educational program	Program competencies																					
	GC1	GC2	GC3	GC4	GC5	GC6	GC7	GC8	GC9	GC10	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12
MC1	+	+			+			+														
MC2	+					+		+														
MC3	+	+				+	+	+		+												
MC4	+	+		+																		
MC5	+	+				+	+			+												
MC6	+	+								+												
MC7								+	+	+												
MC8	+															+						
MC9	+	+					+															
MC10	+		+																			
MC11	+	+	+													+						
MC12	+		+																			
MC13	+		+			+			+	+												
MC14	+		+																			
MC15	+		+																			
MC16	+		+																			
MC17			+																	+		
MC18	+		+				+		+													
MC19	+	+	+								+											
MC20	+	+	+				+															
MC21	+	+	+																			
MC22	+	+	+			+		+	+	+	+		+	+			+	+	+	+	+	+
MC23	+		+				+		+		+				+					+	+	+
MC24	+	+	+			+		+	+	+	+			+						+		
MC25	+	+	+			+		+	+	+	+			+								
MC26		+	+			+																
MC27	+		+				+		+													
MC28	+		+								+											
MC29	+	+	+				+	+	+	+				+			+	+		+		
MC30	+	+	+				+	+	+	+				+			+	+		+		
MC31	+	+	+																			
MC32	+	+	+			+	+	+	+	+			+	+			+	+	+	+	+	+

Continuation of Table 5

Components of educational program	Program competencies																					
	GC1	GC2	GC3	GC4	GC5	GC6	GC7	GC8	GC9	GC10	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10	PC11	PC12
MC33	+	+	+			+	+	+	+	+			+	+			+	+		+	+	+
MC34	+	+	+			+	+	+	+	+			+	+			+	+	+			+
MC35			+						+	+	+	+	+	+							+	
SB1.1			+						+	+				+			+	+		+		
SB1.2			+						+					+				+				
SB1.3		+	+				+				+		+	+			+			+		
SB1.4	+																				+	
SB1.5	+	+	+																			
SB1.6	+												+								+	
SB1.7	+	+	+				+			+	+	+				+	+		+			
SB1.8	+		+				+										+					
SB1.9	+		+				+										+					
SB1.10	+		+				+										+					
SB1.11	+	+	+			+		+	+						+							
SB1.12	+	+	+				+									+					+	
SB1.13		+	+						+		+	+	+	+	+							+
SB1.14	+	+	+				+					+						+			+	+
SB1.15	+	+	+			+	+	+			+	+					+	+		+	+	+
SB1.16	+	+	+																			
SB1.17	+		+							+	+	+	+									+
SB1.18	+		+					+														
SB1.19	+		+					+											+			

6 Matrix for providing program learning outcomes by relevant components of the educational program

Components of educational program	Program outcomes											
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
MC1								+				
MC2			+									
MC3		+										
MC4							+					
MC5			+									
MC6	+											
MC7				+				+				
MC8						+						
MC9								+				
MC10										+		
MC11						+						
MC12								+				
MC13								+				
MC14								+				
MC15								+				
MC16						+						
MC17										+		
MC18								+				
MC19	+											
MC20								+				
MC21								+				
MC22	+		+	+			+	+	+	+	+	+
MC23	+				+					+	+	+
MC24	+			+						+		
MC25	+			+								
MC26	+							+				
MC27								+				
MC28	+											
MC29				+			+	+		+		
MC30				+			+	+		+		
MC31								+				
MC32			+	+			+	+	+	+	+	+
MC33			+	+			+	+		+	+	+

Continuation of Table 6

Components of educational program	Program outcomes											
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
MC34			+	+			+	+	+			+
MC35	+	+	+	+							+	
SB1.1				+			+	+		+		
SB1.2				+				+				
SB1.3	+		+	+			+			+		
SB1.4											+	
SB1.5												
SB1.6			+								+	
SB1.7	+	+				+	+		+			
SB1.8							+					
SB1.9							+					
SB1.10							+					
SB1.11					+							
SB1.12						+					+	
SB1.13	+	+	+	+	+							+
SB1.14		+						+			+	+
SB1.15	+	+					+	+		+	+	+
SB1.16												
SB1.17	+	+	+									+
SB1.18												
SB1.19									+			