МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

Національний аерокосмічний університет ім. М.Є. Жуковського «Харківський авіаційний інститут»

ЗАТВЕРДЖЕНО
вченою радою
Національного аерокосмічного університету ім. М.Є. Жуковського «Харківський авіаційний інститут»
20 березня 2019 р., протокол № 9

ОСВІТНЬО-ПРОФЕСІЙНА ПРОГРАМА

Експлуатаційна діагностика, технічне обслуговування та ремонт авіаційних двигунів та ЕУ

Рівень вищої освіти – перший (бакалаврський)

за спеціальністю 134 Авіаційна та ракетно-космічна техніка

галузі знань 13 Механічна інженерія

Кваліфікація: бакалавра з авіаційної та ракетно-космічної техніки за освітньо-професійною програмою «Експлуатаційна діагностика, технічне обслуговування та ремонт авіаційних двигунів та ЕУ»

Освітня програма вводиться в дію
з «01» вересня 2019 р.

Ректор Національного аерокосмічного університету
ім. М.Є. Жуковського «Харківський авіаційний інститут»
_____ М. В. Нечипорук
наказ № 194 від 4 квітня 2019 р.

Харків 2019 р.

ПЕРЕДМОВА

Освітньо-професійна програма «Експлуатаційна діагностика, технічне обслуговування та ремонт авіаційних двигунів та ЕУ» за спеціальністю 134 «Авіаційна та ракетно-космічна техніка» для підготовки бакалаврів розроблено робочою групою Національного аерокосмічного університету ім. М.Є. Жуковського «Харківський авіаційний інститут» у складі:

проектна група:

1	Гарант освітньої програми	Безуглий С.В.	– канд. техн. наук, доцент, доцент кафедри конструкції авіаційних двигунів
2	Члени проектної групи:	Гаркуша О.І.	– канд. техн. наук, доцент, доцент кафедри конструкції авіаційних двигунів
3	Члени проектної групи:	Зеленський Р.Л.	– канд. техн. наук, доцент кафедри конструкції авіаційних двигунів

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

National Aerospace University named after N.Ye. Zhukovsky
"Kharkiv Aviation Institute"

APPROVED
By Academic Council
of National Aerospace University
named after N.Ye. Zhukovsky
"Kharkiv Aviation Institute"
20 March, 2019, Record # 9

EDUCATIONAL AND PROFESSIONAL PROGRAM

Operational diagnostics, maintenance and repair of aircraft engines and power plants

Level of higher education – first (bachelor)

with Speciality 134 Aviation and Aerospace Technology

in Field 13 Mechanical Engineering

Qualification: Bachelor in Aviation and Aerospace Engineering according to the educational-professional program " Operational diagnostics, maintenance and repair of aircraft engines and power plants"

Enacted from
«01» September, 2019

Rector of National Aerospace University named after
N.Ye. Zhukovsky
"Kharkiv Aviation Institute"
_____ M. Nechyporuk
Order #_194_ 4 April, 2019

Kharkiv 2019

PREFACE

Educational and professional program " Operational diagnostics, maintenance and repair of aircraft engines and power plants " in the specialty 134 "Aviation and rocket and space technology" for the preparation of bachelors developed by the working group of the National Aerospace University named after N.E. Zhukovsky "Kharkiv Aviation Institute" consisting of:

Project group:

1	Guarantor of the educational program	Bezugliy S. V.	– Cand. tech. Sciences, Associate Professor, Associate Professor of the Department of Aircraft Engine Design
2	Project team members:	Garkusha O. I.	– Cand. tech. Sciences, Associate Professor, Associate Professor of the Department of Aircraft Engine Design
3	Project team members:	Zelenskii R. L.	– Cand. tech. Sciences, Associate Professor of the Department of Aircraft Engine Design

INTRODUCTION

According to Art. 1 "Basic terms and their definitions" of the Law of Ukraine "On Higher Education" from 01.07.2014 № 1556-VII (as amended) educational program - 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 to implement 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, programs of academic disciplines and practices;
–Development of diagnostic tools for the quality of higher education;
–Determination of the content of education in the system of retraining and advanced training;
-Professional orientation of applicants for the profession.

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

- volume and term of study of bachelors;
- general competencies;
- professional competencies;
–Program learning outcomes;
- list and scope 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 educational disciplines, practices;
–Determination of 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-professional program "Operational diagnostics, maintenance and repair of aircraft engines and EU" in the specialty 134 "Aviation and rocket and space technology".

Users of the educational and professional program:

- applicants for higher education studying at the National Aerospace University. ME Zhukovsky "Kharkiv Aviation Institute";
-Scientific and pedagogical staff who train bachelors in the educational-professional program "Operational diagnostics, maintenance and repair of aircraft engines and EU" in the specialty 134 "Aviation and rocket and space technology" of the National Aerospace University. ME Zhukovsky "Kharkiv Aviation Institute";
–Examination commission of specialty 134 "Aviation and rocket and space technology";
- Admissions Committee of the National Aerospace University. ME Zhukovsky "Kharkiv Aviation Institute".

The educational and professional program extends to the departments of the University involved in the training of bachelor's degree in the educational and professional program "Operational diagnostics, maintenance and repair of aircraft engines and EU" in the specialty 134 "Aviation and rocket and space technology".

1. REGULATORY REFERENCES

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

1. Law of Ukraine "On Higher Education". № 1556-UII dated 01.07.2014 (as amended). Law of Ukraine "On Higher Education". № 1556-UII dated 01.07.2014 (as amended).
2. Resolution of the Cabinet of Ministers of Ukraine "On approval of the National Qualifications Framework" dated 23.11.2011 № 1341.
3. Resolution of the Cabinet of Ministers of Ukraine "On approval of the list of branches of knowledge and specialties for which the training of applicants for higher education" from 29.04.2015 № 266.
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 № 579.
5. National Classifier of Ukraine. Classifier of professions DK 003: 2010, approved by the order of Derzhspozhyvstandart of Ukraine dated 28.07.2010 № 327 (as amended).
6. Methodical recommendations for the development of higher education standards, approved by the higher education sector of the Scientific and Methodological Council of the Ministry of Education and Science of Ukraine, protocol of March 29, 2016 № 3.
7. Regulations "On the organization of the educational process" SUYA KHAI-NOV-P / 005: 2016 of the National Aerospace University. ME Zhukovsky "Kharkiv Aviation Institute", approved by the Academic Council of the University on 18.05.2016, protocol № 10.
8. A Tuning Guide to Formulating Degree Programme Profiles Including Programme Competences and Programme Learning Outcomes. -Bilbao, Groningen and The Hague, 2010.
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.
10. Development of educational programs. Methodical recommendations / Author. : VM Zakharchenko, VI Lugovyi, Yu. M. Rashkevich, Zh. V. Talanova / Ed. VG Kremenya. - K.:SE "Priorities", 2014. - 120 p.
11. 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 № 266" dated 06.11.2015 № 1151.
12. Classification of types of economic activity: DK 009: 2010. - Valid from 01.01.2012. - (National Classifier of Ukraine).
13. Classifier of professions: DK 003: 2010. - Valid from 01.11.2010. - (National Classifier of Ukraine).
14. National educational glossary: higher education / 2nd ed., Revised. And extra. /Author-compiler: VM Zakharchenko, SA Kalashnikov, VI Lugovyi, AV Stavytsky, Yu. M. Rashkevich, Zh. V. Talanova / Ed. VG Kremenya. - Kyiv: Pleiades Publishing House LLC, 2014. - 100 p.

2. PROFILE OF THE EDUCATIONAL PROFESSIONAL PROGRAM "OPERATING DIAGNOSTICS", MAINTENANCE AND REPAIR OF AVIATION ENGINES AND MACHINES

1 - General information	
Full name of the higher educational institution and structural subdivision	National Aerospace University. ME Zhukovsky "Kharkiv Aviation Institute" Department of Aircraft Engine Design
Degree of higher education and title of qualification in the original language	Degree of higher education - bachelor Qualification: bachelor in aerospace and propulsion engineering according to the education and vocational program “Operational Diagnostics, Maintenance and Repair of Aircraft Engines and PP“
The official name of the educational and professional program	Operational Diagnostics, Maintenance and Repair of Aircraft Engines and Power Plants
Type of diploma and scope of educational and professional program	Bachelor's degree, single degree, 240 ECT credits, term of study 3 years 10 months
Availability of accreditation	Certificate of accreditation: Series ID-II № 21001693, issued on 20.02.2018 by the order of the Ministry of Education and Science of Ukraine dated 19.12.2016 № 1565 Valid 01.07. 2024.
Cycle / level	NRC of Ukraine - level 7, FQ-EHEA - first cycle,EQF-LLL-level 6.
Prerequisites	Complete secondary education
Language (s) of instruction	The language of instruction is English
Validity of the educational and professional program	Before the introduction of a new educational program
Internet address of the permanent placement of the description of the educational-professional program	Website address: www.k203.khai.edu
2 - The purpose of the educational program	
1 To provide theoretical knowledge and practical skills sufficient for successful performance of professional duties under the educational-professional program "Operational diagnostics, maintenance and repair of aircraft engines and EU" in the specialty 134 "Aviation and rocket and space technology". 2 Formation of the personality of a specialist able to use professional knowledge and practical skills to solve complex specialized problems and practical problems of technical maintenance and repair of aircraft engines used in aviation and rocket and space technology.	
3 - Characteristics of the educational-professional program	
Subject area	**Object of study:** The object of study is the design of aircraft gas turbine and reciprocating engines, working processes, theoretical foundations and engineering methods of calculation of aircraft engines, units and systems that ensure engine operation, loads acting in parts, calculations on structural strength , rigidity, stability, endurance, oscillations and service life of parts as the basis of their trouble-free operation within the specified operating time, control and diagnostic systems of engines, construction materials

	used in engines. **The purpose of training:** formation of higher education students with a set of knowledge, skills and abilities for application in professional activities in the field of aircraft engine construction: solving and generalizing practical problems in their professional activities using fundamental and special applied design methods, calculations of aircraft engines and their systems , modern methods of diagnostics and control of a technical condition, bases of operation of engines of aircraft. **Theoretical content of the subject area:** design of aircraft engines of all types; requirements for engines for various purposes; design of engine components and systems and parts; modern models, methods and algorithms, processes occurring in engines; methods of systematization and decision-making in the management of complex systems and objects. **Methods, techniques and technologies:** Mathematical models, methods and algorithms for solving theoretical and applied problems that arise in the development and operation of engines; static and dynamic loads acting on the elements of the engine and the aircraft; modern software packages for the design and calculation of engines and their systems; the procedure for designing an aircraft engine and its tests; technologies and methods of production and maintenance during operation, quality assurance. **Tools and equipment:** application packages for engine design and calculations, technical training aids, laboratory installations, split models of engines and units.
Orientation of the educational-professional program	Educational and professional bachelor's program
The main focus of the educational-professional program (specialization)	Modern models, processes occurring in engines, methods and algorithms of calculations; methods of systematization and decision-making in the management of complex systems and objects.
Features of the program	The program provides study of the theoretical foundations of aircraft engine construction, acquisition of relevant knowledge and competencies in classical and modern achievements in the field of design, production and operation of aircraft engines, deep knowledge of models, methods and algorithms of calculations related to design and development of aircraft engines. also technologies of their production and operation. Specialists are trained who are able to apply the acquired knowledge of mathematical foundations, principles of modeling of gas-dynamic and strength processes, algorithmic principles in design, development of technical systems, perform comparative analysis of engine designs and their systems. The ability to use modern application packages, structural and object-oriented approaches to independent creative work and a system of expert decision support are developed.
4 - Suitability of graduates for employment and further study	
Suitability for employment	Graduates can work: at the enterprises-developers, the enterprises-manufacturers of aviation equipment, the enterprises on service of aviation equipment; in design and engineering, research,

	production and special industry institutions for the development, manufacture of aircraft and its components.
Further training	It is possible to continue education at the second (master's) 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 work, seminars, practical classes in small groups, independent work based on textbooks and abstracts, consultations with teachers, preparation of bachelor's thesis.
Evaluation	Written exams, practice reports, essays, presentations, current (modular) control, project (bachelor's) work and its defense.
6 – Program Components	
Integral competence	Ability to solve complex specialized and practical problems related to the development, production and certification of aerospace and rocket technology, which involves the application of theories and methods of physics, mathematics and engineering, and is characterized by complexity and uncertainty.
General competencies (Загальні компетентності, ЗК)	ЗК 1. Ability to communicate in the state language both orally and in writing. ЗК 2. Ability to communicate in a foreign language. ЗК 3. Skills for safe activities, the desire to preserve the environment ЗК 4. Skills in the use of information and communication technologies. ЗК 5. Ability to work both independently and in a team with representatives of other professional groups. ЗК 6. Ability to generate new ideas (creativity). ЗК 7. Ability to make informed decisions in normal and special situations and implement them correctly. ЗК 8. Ability to learn and master modern knowledge. ЗК 9. The ability to exercise their rights and responsibilities as a member of society, to realize the values of civil (free democratic) society and the need for its sustainable development, the rule of law, human and civil rights and freedoms and Ukraine. ЗК 10. Ability to preserve and increase moral, cultural, scientific values and achievements of society based on understanding the history and patterns of development of the subject area, its place in the general system of knowledge about nature and society and in the development of society, technology and technology, use different types and forms of motor activities for recreation and a healthy lifestyle. ЗК 11. Knowledge and understanding of the subject area and understanding of the features of the profession. ЗК 12. The ability to think abstractly, concretely and generalized, to analyze and synthesize.
Special (professional) competence (Спеціальні (фахові) компетентності, ФК)	ФК1. Ability to use theories of flight dynamics and control in the design of aircraft and rocket and space technology. ФК2. Ability to use the positions of hydraulics, aero- and gas dynamics to describe the interaction of bodies with the gaseous and

	hydraulic environment. ФК3. Ability to assign optimal materials for structural elements of aircraft and rocket and space technology. ФК4. Ability to calculate the elements of aerospace and rocket and space technology for strength. ФК5. Ability to design and test elements of aerospace and rocketry, its equipment, systems and subsystems. ФК6. Ability to develop and implement technological processes of production and maintenance of elements and objects of aviation and rocket and space technology. ФК7. Skills in the use of information and communication technologies and specialized software in teaching and professional activities. ФК8. Ability to take into account economic and managerial aspects of the production of elements and objects of aviation and rocket and space technology in professional activities. ФК9. Possession of the basics of operation and maintenance of aircraft, engines and their systems. ФК10. Ability to develop measures to diagnose and eliminate malfunctions and failures of engine systems, to analyze the causes of their occurrence, to develop and implement measures to prevent them. ФК11. Ability to perform official duties in accordance with applicable regulations based on knowledge of aviation technology and the influence of the human factor.
7 - Program learning outcomes Програмні результати навчання (ПРН)	
	ПРН1. To communicate freely orally and in writing in state and foreign languages on professional issues. ПРН2. Understand environmentally hazardous and harmful factors of professional activity and adjust its content in order to prevent negative impact on the environment. ПРН3. Have the means of modern information and communication technologies to the extent sufficient for training and professional activities. ПРН4. Explain their decisions and the basis for their adoption to specialists and non-specialists in a clear and unambiguous form. ПРН5. Have the skills of self-study and autonomous work to improve professional skills and solve problems in a new or unfamiliar environment. ПРН6. To form substantiated assessments of the actions of state bodies and other political institutions from the standpoint of universal, democratic values, the priority of human and civil rights and freedoms. ПРН7. Have the logic and methodology of scientific knowledge, based on an understanding of the current state and methodology of the subject area. ПРН8. Comply with the requirements of industry regulations on the procedures for design, manufacture, testing, operation and (or) certification of elements and objects of aerospace and rocket technology at all stages of their life cycle.

	ПРН9. Explain the influence of design parameters of elements of aviation and rocket and space technology on its flight characteristics. Have an idea of the methods of ensuring the stability and controllability of aviation and rocket and space technology. ПРН10. Have the skills to determine the loads on the structural elements of aviation and space technology at all stages of its life cycle. ПРН11. Understand the principles of fluid and gas mechanics, in particular, hydraulics, aerodynamics (gas dynamics). ПРН12. Describe the structure of metals and nonmetals and know the methods of modifying their properties. Assign optimal materials for elements and systems of aerospace and rocket technology, taking into account their structure, physical, mechanical, chemical and operational properties, as well as economic factors. ПРН13. Understand the features of work processes in hydraulic, pneumatic, electrical and electronic systems used in aerospace and rocketry. ПРН14. Describe experimental methods for studying the structural, physical-mechanical and technological properties of materials and structures. ПРН15. Apply in professional activities modern methods of design, construction and production of elements and systems of aviation and space technology. ПРН16. Calculate the stress-strain state, determine the ineffectiveness of structural elements and the reliability of aerospace and rocket systems. ПРН17. Understand and justify the sequence of design, manufacture, testing, operation and (or) certification of elements and systems of aerospace and rocketry. ПРН18. Understand the structure and principles of operation of onboard and navigation equipment of aviation and space technology. ПРН19. Understand and justify the design features and basic aspects of work processes in systems and elements of aerospace and rocket technology. ПРН20. Understand the theoretical principles and practical methods of instrumental interchangeability of parts of aerospace and rocket technology. ПРН21. Have the skills to develop technological processes, including the use of automated computer-aided design of the production of structural elements and systems of aerospace and rocketry. ПРН22. Assess the economic efficiency of production of elements and systems of aviation rocket and space technology. ПРН23. Understand how operational factors affect the design of aircraft, engines and their systems. ПРН24. Have basic knowledge of the organization of maintenance and repair of aircraft. ПРН25. Have a basic knowledge of methods and tools for diagnosing aircraft, engines and their systems. ПРН26. Have basic knowledge to ensure compliance of aircraft with the requirements of regulatory and technical documentation

	and standards of airworthiness and flight safety.
8 - Resource support for program implementation	
Staffing	Research and teaching staff involved in the teaching of professionally oriented disciplines have academic degrees or academic titles and meet licensing requirements. Meets the personnel requirements to ensure the implementation of educational activities in the field of higher education in accordance with current legislation of Ukraine (Resolution of the Cabinet of Ministers of Ukraine "On approval of licensing conditions for educational activities of educational institutions" of December 30, 2015 № 1187, Annex 8).
Logistics support	Training is carried out in the laboratory of gas turbine engines, computer classes; course and diploma design laboratories; laboratories of aircraft engine dynamics; laboratories of gas turbine engines and laboratories of aircraft engine units. Computer classes, projection equipment and visual aids are used, as well as modern system, application and computer programs. Meets the material and technical requirements to ensure the implementation of educational activities in the field of higher education in accordance with current legislation of Ukraine (Resolution of the Cabinet of Ministers of Ukraine "On approval of licensing conditions for educational activities of educational institutions" of December 30, 2015 № 1187, Annex 9).
Information and educational and methodical support	The use of virtual learning environment of the National Aerospace University. ME Zhukovsky "Kharkiv Aviation Institute" and author's developments of the teaching staff. Textbooks, manuals, reference books of the library of the National Aerospace University. ME Zhukovsky "Kharkiv Aviation Institute". Professional periodicals ("Aerospace Engineering and Technology", "Bulletin of Engine Building", "Internal Combustion Engines", "Engine Building", "Engine", "Flight", "Mechanical Engineering Problems", "Strength Problems", "Information Technologies" , "Problems of control and informatics", "Cybernetics and systems analysis", "Control systems and machines"). Methodical manuals and lecture notes of the fund of the methodical office of the department of aircraft engine design, which are also posted in electronic form on the website of the department (website address: www.k203.khai.edu). Articles, patents and dissertations of the teaching staff of the Department of Aircraft Engine Design. Meets informational and educational requirements for ensuring the implementation of educational activities in the field of higher education in accordance with current legislation of Ukraine (Resolution of the Cabinet of Ministers of Ukraine "On approval of licensing conditions for educational activities of educational institutions" of December 30, 2015 № 1187, Annexes 10-11).
9 - Academic mobility	
National credit mobility	Based on bilateral agreements between the National Aerospace University. N.E. Zhukovsky "Kharkiv Aviation Institute" and technical institutions of Ukraine.
International credit mobility	Based on bilateral agreements between the National Aerospace

	University. ME Zhukovsky "Kharkiv Aviation Institute" and educational institutions of partner countries.
Training of foreign applicants for higher education	Education of foreign citizens is carried out in the state or English languages. If the education is conducted in the state language, then in certain cases it may be decided to teach one or more disciplines in English and / or other foreign languages, while ensuring the knowledge of students of the discipline in the state language.

3.LIST OF COMPONENTS OF THE EDUCATIONAL PROFESSIONAL PROGRAM (EPP) AND THEIR LOGICAL SEQUENCE

3.1. List of components

EPP 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**
Required components Обов'язкові компоненти ОП (ОК)			
1. The cycle of general training			
1.1 Disciplines of humanitarian and socio-economic training			
ОК1	Language Training (Мовна підготовка)	16	Accessment 1,2 def. Accessment 7
ОК2	Philosophy (Філософія)	3	Accessment 5
1.2 Disciplines of natural science (fundamental training)			
ОК3	Chemistry and Fundamentals of Ecology (Хімія та основи екології)	3	Accessment 1
ОК4	Descriptive Geometry (Нарисна геометрія)	4	Exam 1
ОК5	Electrical Engineering (Електротехніка)	3	Accessment 3
ОК6	Higher Mathematics (Вища математика)	17,5	Exam 123
ОК7	Engineering Materials Science (Інженерне матеріалознавство)	3	Exam 3
ОК8	Aviation Materials Science (Авіаційне матеріалознавство)	4	Exam 4
ОК9	Physics (Фізика)	10,5	Exam 12
ОК10	Programming and Computing Methods (Програмування та методи обчислень)	4,5	Exam 2
ОК11	Theoretical Mechanics (Теоретична механіка)	8	Exam 23
ОК12	Thermodynamics and Heat Transfer (Термодинаміка і теплообмін)	3	Accessment 3
2. Cycle of professional training			
2.1 Disciplines of general professional training			
ОК13	Fundamentals of Machinery Design TP (Деталі машин та основи конструювання КП)	2	def. Accessment 6
ОК14	Fundamentals of Machinery Design (Деталі машин та основи конструювання)	5	Exam 5
ОК15	Engineering and Computer Graphics (Інженерна і комп'ютерна графіка)	6	def. Accessment 23
ОК16	Fundamentals of Aerospace Engineering (Інженерні основи авіаційно-космічної техніки)	3	Accessment 1
ОК17	Interchangeability and Standardization (Взаємозамінність та стандартизація)	3	Accessment 3
ОК18	Mechanics of Materials and Structures (Механіка матеріалів і конструкцій)	9,5	Exam 34
ОК19	Engineering Mechanics TP (Теорія механізмів і машин КП)	2	def. Accessment 1
ОК20	Engineering Mechanics (Теорія механізмів і машин)	3,5	Exam 4

ОК21	Aircraft Piston Engines (Авіаційні поршневі двигуни)	4	Accessment 8
ОК22	Aircraft Power Plants and Units (Авіаційні силові установки і агрегати)	6	Exam 5
ОК23	Aircraft Ground Maintenance Technologies (Технології наземного обслуговування повітряних суден)	4,5	Accessment 6
ОК24	Design and Dynamics of AE and PP (Конструкція і динаміка АД і ЕУ)	5,5	Accessment 7
ОК25	Design, Dynamics and Strength of AE and PP (TW) (Конструкція, динаміка та міцність АД та ЕУ (КП)	2	def. Accessment 8
ОК26	Engines and Power Plants Manufacturing Technology (Технологія виробництва двигунів та енергетичних установок)	4,5	Exam 7
ОК27	Maintenance, Repair and Use of Aircraft Engines in Land Power Plants (Експлуатація, ремонт та використання авіаційних двигунів у наземних установках)	4	Exam 8
ОК28	Theory and Calculation of Impeller Machines (TW) (Теорія і розрахунок лопатевих машин (КР))	2	def. Accessment 6
ОК29	Theory and Calculation of Impeller Machines (Теорія і розрахунок лопатевих машин)	7,5	Exam 56
ОК30	Theory of Air-Jet Engines (TP) (Теорія повітряно-реактивних двигунів (КП))	2	def. Accessment 7
ОК31	Theory of Air-Jet Engines (Теорія повітряно-реактивних двигунів)	5,5	Exam 6
2.2 Disciplines of professional and practical training			
ОК32	Academic Training (Навчальна практика)	3	Accessment 2
ОК33	Bachelor`s Graduate Work (Випускна робота бакалавра)	9	defense of a bachelor's thesis
ОК34	Introductory Training (Ознайомча практика)	3	Accessment 4
ОК35	Industrial Training (Виробнича практика)	4	Accessment 6
The total amount of required components		**180**	
Selective components			
Selective unit 1 ***Вибірковий блок 1 (ВБ1)***			
ВБ1.1	Business Economics (Економіка підприємства)	4	Accessment 7
ВБ1.2	Technologies of Engineering Materials (Технології конструкційних матеріалів к. 104)	3	Exam 5
ВБ1.3	Basics of Technical Diagnos (Основи технічної діагностики)	4	Exam 8
ВБ1.4	Aircraft Maintenance (Технічна експлуатація повітряних суден)	8,5	Exam 8
ВБ1.5	Airport Operation and Airport Technologies (Функціонування аеропортів та аеропортові технології)	3,5	Exam 4
ВБ1.6	Computer Aided Design (Комп'ютерні технології проектування)	5,5	Accessment 4
ВБ1.7	Design and strength of AE and PP (Конструкція і міцність АД і ЕУ)	6,5	Exam 6
ВБ1.8	Design of Aircraft Power Plants and Units (Проектування авіаційних силових установок і	5,5	Exam 7

	агрегатів)		
ВБ1.9	Engine Technology (Технологія двигунобудування)	8	Exam 68
ВБ1.10	Fluid and Gas Dynamics (Гідрогазодинаміка)	4,5	Exam 4
ВБ1.11	Hydraulics (Гідравліка)	3	Accessment 5
ВБ1.12	Structure and Strength of Aircraft (Конструкція і міцність літальних апаратів)	4	def. Accessment 5
Selective unit 2 ***Вибірковий блок 2 (ВБ2)***			
ВБ2.1	Aerohydrodynamics (Аерогідродинаміка)	5	Exam 4
ВБ2.2	Aircraft Ground Maintenance Technologies (Технології наземного обслуговування повітряних суден)	4.5	Accessment 6
ВБ2.3	Structure and Strength of Aircraft (Конструкція і міцність літальних апаратів)	4	Accessment 5
ВБ2.4	Aircraft Maintenance (Технічна експлуатація повітряних суден)	8,5	Exam 78
ВБ2.5	Aircraft Maintenance (TW) (Технічна експлуатація повітряних суден (КР)	2	def. Accessment 8
ВБ2.6	Aircraft Operating Life and Durability (Ресурс та довговічність авіаційної техніки)	4	Exam 6
ВБ2.7	Aviation Fuel and Lubrication Materials (Авіаційні паливно-мастильні матеріали)	4	Accessment 4
ВБ2.8	Computer Systems for Aircraft Life Cycle Provision (Комп'ютерні системи забезпечення життевого циклу повітряних суден)	4	Exam 5
ВБ2.9	Flight Dynamics (Динаміка полету)	4	Exam 6
ВБ2.10	Fundamentals of Aircraft Manufacturing and Maintenance (Основи технології виробництва і ремонту повітряних суден)	5	іпит 6
ВБ2.11	Fundamentals of Aircraft Manufacturing and Maintenance (ТР) (Основи технології виробництва і ремонту повітряних суден) (КП)	2	def. Accessment 7
ВБ2.12	Hydropneumatic Devices of Aircraft Engineering (Гідропневмопристрої авіаційної техніки)	4	Exam 5
ВБ2.13	Principles of Aerospace Engineering Reliability (Основи надійності авіаційної техніки)	3	Accessment 7
ВБ2.14	Simulation of Aircraft Operation Processes and Systems (Моделювання експлуатаційних процесів і систем повітряних суден)	6	Exam 6
The total amount of sample components		**60**	
TOTAL VOLUME OF THE EDUCATIONAL PROGRAM		**240**	

3.2. Structural and logical scheme of EPP

The structural and logical scheme of the educational-professional program reflects the sequence of studying its components and is given in Appendix A (scheme or table). The scheme contains mandatory components and components of the sample block, because this block is the basic (priority) for this educational program. If another sample unit is selected as 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 the components of OP

№ за/п	EPP code	Names of the components of EPP	The purpose and objectives of the EPP component	Formation of competence.	
				General.	Special.
I semester					
1	**ОК1**	Language Training (Мовна підготовка)	**Purpose:** mastering knowledge of a foreign language to study specialties in a foreign language. **Task:** to study the basic terms of the specialty with the help of a foreign language.	ЗК2 ЗК8	ПРН1 ПРН4 ПРН5
2	**ОК3**	Chemistry and Fundamentals of Ecology (Хімія та основи екології)	**Purpose:** acquaintance of applicants with the main laws of physicochemical processes. **Task:** to study the basic laws and possibilities of chemical reactions, to learn to calculate the kinetic characteristics of processes.	ЗК3 ЗК7 ЗК8	ФК3 ПРН4 ПРН12 ПРН13
3	**ОК4**	Descriptive Geometry (Нарисна геометрія)	**Purpose:** the course provides the basics of descriptive geometry: working with projections, curved surfaces, solving positional problems. **Task:** development of spatial representation and imagination, constructive-geometric thinking, abilities to analyze and synthesize spatial forms and relationships.	ЗК7 ЗК8	ФК5 ПРН8 ПРН15 ПРН17 ПРН20 ПРН21
4	**ОК6**	Higher Mathematics (Вища математика)	**Purpose:** deep mastering of knowledge about the basic methods of higher mathematics, which will provide the logic of mathematical thinking of applicants. **Task:** to study the basic methods of higher mathematics for further use in disciplines related to mathematical models and optimization methods.	ЗК6 ЗК7 ЗК8	ФК2 ФК4 ФК5 ФК6 ФК8 ПРН4 ПРН14 ПРН16 ПРН21 ПРН22 ПРН26
5	**ОК9**	Physics (Фізика)	**Purpose:** deep mastering of knowledge about the basic laws of physics, ensuring the correct formulation of problems of control and management of physical characteristics. **Task:** to study the basic patterns, methods and models for further use in the disciplines of the specialty.	ЗК3 ЗК7 ЗК8	ФК4 ПРН4 ПРН5 ПРН10 ПРН11 ПРН12 ПРН13 ПРН19 ПРН21
6	**ОК16**	Fundamentals of Aerospace Engineering (Інженерні основи авіаційно-	**Purpose:** formation of initial knowledge and ideas about the current state and prospects of aviation science, engineering and technology. **Task:** to study the main characteristics of aircraft and missile technology, the principles of operation of aircraft and missile power plants,	ЗК5 ЗК7 ЗК8	ФК2 ФК3 ФК5 ПРН9 ПРН15 ПРН19

		космічної техніки)	technology for the production of aircraft and missile technology.		ПРН21 ПРН23 ПРН24 ПРН26
II semester					
7	**ОК1**	Language Training (Мовна підготовка)	**Purpose:** mastering knowledge of a foreign language to study specialties in a foreign language. **Task:** to study the basic terms of the specialty with the help of a foreign language.	ЗК2 ЗК8	ПРН1 ПРН4 ПРН5
8	**ОК6**	Higher Mathematics (Вища математика)	**Purpose:** deep mastering of knowledge about the basic methods of higher mathematics, which will provide the logic of mathematical thinking of applicants. **Task:** to study the basic methods of higher mathematics for further use in disciplines related to mathematical models and optimization methods.	ЗК6 ЗК7 ЗК8	ФК2 ФК4 ФК5 ФК6 ФК8 ПРН4 ПРН14 ПРН16 ПРН21 ПРН22 ПРН26
9	**ОК9**	Physics (Фізика)	**Purpose:** deep mastering of knowledge about the basic laws of physics, ensuring the correct formulation of problems of control and management of physical characteristics. **Task:** to study the basic patterns, methods and models for further use in the disciplines of the specialty.	ЗК3 ЗК7 ЗК8	ФК4 ПРН4 ПРН5 ПРН10 ПРН11 ПРН12 ПРН13 ПРН19 ПРН21
10	**ОК10**	Programming and Computing Methods (Програмування та методи обчислень)	**Purpose:** to provide the basics of programming in appropriate languages, programming methods, algorithms for creating modern software products. **Task:** to study the basic concepts and structures of programming to create software components of computer systems.	ЗК4 ЗК8	ФК7 ПРН3
11	**ОК11**	Theoretical Mechanics (Теоретична механіка)	**Purpose:** to master the laws of classical mechanics and methods of analytical study of the mechanical motion of a material point, a rigid body and a mechanical system. **Task:** to study the basic concepts and laws of statics, kinematics and dynamics for use in calculations of motion and equilibrium of mechanical systems.	ЗК7 ЗК8	ФК3 ФК4 ФК7 ПРН4 ПРН17
12	**ОК15**	Engineering and Computer Graphics (Інженерна і комп'ютерна графіка)	**Purpose:** To provide students with knowledge of computer graphics for modeling and creating complex objects in the visual representation. **Task:** to study the basic concepts of 3D modeling and their use in information technology and software systems for computer design.	ЗК5 ЗК7 ЗК8	ФК5 ФК6 ПРН8 ПРН17 ПРН19 ПРН21

13	**ОК32**	Academic Training (Навчальна практика)	**Purpose:** consolidation of acquired knowledge, skills and abilities in general engineering and professionally-oriented disciplines. **Task:** to form and expand production skills, to provide a basis for the course project and theoretical training of bachelors.	ЗК5 ЗК7 ЗК8	ФК3 ФК5 ПРН8 ПРН9 ПРН15 ПРН17 ПРН19 ПРН21
III semester					
14	**ОК5**	Electrical Engineering (Електротехніка)	**Purpose:** To teach students to use methods and models of electrical engineering in creating hardware for computer systems. **Task:** to study electrical and electronic tools for use in the practice of computer science.	ЗК7 ЗК8	ФК4 ПРН4 ПРН18
15	**ОК6**	Higher Mathematics (Вища математика)	**Purpose:** deep mastering of knowledge about the basic methods of higher mathematics, which will provide the logic of mathematical thinking of applicants. **Task:** to study the basic methods of higher mathematics for further use in disciplines related to mathematical models and optimization methods.	ЗК6 ЗК7 ЗК8	ФК2 ФК4 ФК5 ФК6 ФК8 ПРН4 ПРН14 ПРН16 ПРН21 ПРН22 ПРН26
16	**ОК7**	Engineering Materials Science (Інженерне матеріалознавство)	**Purpose:** to study the production and application of materials used in production, taking into account the purpose, design and manufacturing technology. **Task:** acquaintance with the main production of modern materials.	ЗК3 ЗК7 ЗК8	ФК3 ПРН2 ПРН4 ПРН8 ПРН12 ПРН14 ПРН21
17	**ОК11**	Theoretical Mechanics (Теоретична механіка)	**Purpose:** to master the laws of classical mechanics and methods of analytical study of the mechanical motion of a material point, a rigid body and a mechanical system. **Task:** to study the basic concepts and laws of statics, kinematics and dynamics for use in calculations of motion and equilibrium of mechanical systems.	ЗК7 ЗК8	ФК3 ФК4 ФК7 ПРН4 ПРН17
18	**ОК15**	Engineering and Computer Graphics (Інженерна і комп'ютерна графіка)	**Purpose:** To provide students with knowledge of computer graphics for modeling and creating complex objects in the visual representation. **Task:** to study the basic concepts of 3D modeling and their use in information technology and software systems for computer design.	ЗК5 ЗК7 ЗК8	ФК5 ФК6 ПРН8 ПРН17 ПРН19 ПРН21
19	**ОК17**	Interchangeability and Standardization (Взаємозамінність та	**Purpose:** mastering the basics of interchangeability, standardization and metrology. **Task:** to obtain the necessary knowledge both in the process of further study at the university and in the subsequent practical engineering	ЗК3 ЗК7 ЗК8	ФК5 ФК6 ПРН4 ПРН17 ПРН20

		стандартизація)	activities.		ПРН21
20	**ОК18**	Mechanics of Materials and Structures (Механіка матеріалів і конструкцій)	**Purpose:** to instill skills in the application of modern engineering methods of calculations of structural elements and structures for strength, rigidity and stability. **Task:** to learn the application of modern engineering methods for calculating the elements of structures and structures for strength, rigidity and stability.	ЗК7 ЗК8	ФК3 ФК4 ПРН4 ПРН9 ПРН17 ПРН21
21	**ОК12**	Thermodynamics and Heat Transfer (Термодинамік а і теплообмін)	**Purpose:** to acquire 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, determination of efficiency of power installations and the basic sources of losses of working capacity, calculation of a temperature condition of the simplest geometrical analogues of elements of objects of aerospace engineering.	ЗК7 ЗК8	ФК2 ФК7 ПРН3 ПРН4 ПРН19
IV semester					
22	**ОК8**	Aviation Materials Science (Авіаційне матеріалознавс тво)	**Purpose:** to study the production and application of materials used in production, taking into account the purpose, design and manufacturing technology. **Task:** acquaintance with the main production of modern materials.	ЗК3 ЗК7 ЗК8	ФК3 ПРН2 ПРН4 ПРН8 ПРН12 ПРН14 ПРН21
23	**ОК18**	Mechanics of Materials and Structures (Механіка матеріалів і конструкцій)	**Purpose:** to instill skills in the application of modern engineering methods of calculations of structural elements and structures for strength, rigidity and stability. **Task:** to learn the application of modern engineering methods for calculating the elements of structures and structures for strength, rigidity and stability.	ЗК7 ЗК8	ФК3 ФК4 ПРН4 ПРН9 ПРН17 ПРН21
24	**ОК19**	Engineering Mechanics CP (Теорія механізмів і машин КП)	**Purpose:** to gain experience and practical skills in solving problems related to the design of parts and components of aerospace technology. **Task:** the implementation of the course project involves the calculation and design of one of the components of aircraft engines.	ЗК6 ЗК7 ЗК8	ФК3 ФК4 ПРН4 ПРН8 ПРН9 ПРН10 ПРН15 ПРН17
25	**ОК20**	Engineering Mechanics (Теорія механізмів і машин)	**Purpose:** to study methods of research of properties of mechanisms and machines, designing of lever and gear mechanisms **Task:** students acquire the knowledge and skills needed in the study and design of mechanisms and components of aircraft.	ЗК6 ЗК7 ЗК8	ФК3 ФК4 ПРН4 ПРН8 ПРН9 ПРН10 ПРН15

					ПРН17
26	**ОК34**	Introductory Practice (Ознайомча практика)	**Purpose:** testing and consolidation of acquired knowledge, skills and abilities in general engineering and professionally-oriented disciplines, providing information and production base for course projects, study and mastering disciplines. **Task:** to create the processing scheme and the sketch of technological operation, to edit the working drawing according to modern standards.	ЗК5 ЗК7 ЗК8	ФК3 ФК4 ФК6 ФК7 ПРН3 ПРН4 ПРН12 ПРН15 ПРН17 ПРН20 ПРН21
27	**ВБ1.5**	Airport Operation and Airport Technologies (Функціонування аеропортів та аеропортові технології)	**Purpose:** acquaintance with the airport as a functional system, classification of airports, rules of their certification, basic airport technologies and technological equipment that provides them, etc. **Task:** study of the main functions of the airport as a whole and its individual services; research of technological processes and technologies of air transportation services; study of airport management systems as a system.	ЗК5 ЗК8 ЗК11 ЗК12	ФК6 ФК8 ФК9 ФК10 ФК11 ПРН10 ПРН12 ПРН23 ПРН24 ПРН25 ПРН26
28	**ВБ1.10**	Fluid and Gas Dynamics (Гідрогазодинаміка)	**Purpose:** study - the acquisition of knowledge, skills and abilities that will develop simplified semantic and mathematical models of gas-dynamic processes in heat engines. **Task:** the applicant must have basic knowledge in the field of hydrodynamics and be able to use them.	ЗК3 ЗК7 ЗК8	ФК2 ПРН3 ПРН4 ПРН19
29	**ВБ1.6**	Computer Aided Design (Комп'ютерні технології проектування)	**Purpose:** modeling of parts and assemblies of aircraft engines and power plants. **Task:** to study the methods and approaches of three-dimensional modeling of aircraft engines in the software package SolidWorks ..	ЗК4 ЗК5 ЗК8 ЗК10 ЗК11 ЗК12	ФК6 ФК7 ПРН3 ПРН4 ПРН5 ПРН10 ПРН16
30	**ВБ2.1**	Aerohydrodynamics (Аерогідродинаміка)	**Мета:** дати студентам знання основних законів аерогідродинаміки, ролі й місця теоретичних та експериментальних досліджень, обчислювального експерименту, вплив аерогідродинаміки на формування зовнішнього вигляду літального апарату (ЛА), перспектив розвитку аерогідродинаміки. **Purpose:** to give students knowledge of the basic laws of aerohydrodynamics, the role and place of theoretical and experimental research, computational experiment, the impact of aerohydrodynamics on the formation of the appearance of the flying vehicles (FV), prospects for	ЗК3 ЗК5 ЗК7 ЗК8	ФК2 ПРН3 ПРН4 ПРН19

			the development of aerohydrodynamics. **Task:** to study the discipline "Aerohydrodynamics" - to give students knowledge of methods for calculating the aerodynamic characteristics of FV and their elements, the ability to analyze the features of aerodynamic layout and aerodynamic characteristics of aircraft and helicopters.		
31	**ВБ2.7**	Aviation Fuel and Lubrication Materials (Авіаційні паливно-мастильні матеріали)	**Purpose:** 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 fuels and lubricants" are: - General method of chemotology - scientific and engineering analysis of the relationship between technology and fuel used in it, in terms of operation and at the stages of development and testing of new equipment and new Fuel.	ЗК3 ЗК5 ЗК11	ФК3 ФК4 ФК7 ФК8 ФК9 ФК11 ПРН2 ПРН5 ПРН14 ПРН23 ПРН24 ПРН26
V semester					
32	**ОК2**	Philosophy (Філософія)	**Purpose:** to reveal the fundamental foundations of philosophy for creative thinking of students in the socio-economic environment. **Task:** to show students the use of the basics of philosophy for dialectical thinking in the real world.	ЗК1 ЗК8 ЗК9 ЗК10	ПРН1 ПРН7
33	**ОК14**	Fundamentals of Machinery Design (Деталі машин та основи конструювання)	Purpose: to calculate and design parts and components of aerospace and rocket technology **Task:** study of bases of calculations and designing, criteria of serviceability of details and knots of cars, mastering of methods of calculation of various details, acquaintance with modern methods of designing.	ЗК6 ЗК7 ЗК8	ФК3 ФК4 ПРН4 ПРН8 ПРН9 ПРН10 ПРН15 ПРН17
34	**ОК22**	Aircraft power plants and accessories (Авіаційні силові установки і агрегати)	**Purpose:** knowledge is required in the development of structures, design and manufacture of systems and units that are part of the aircraft power plant. **Task:** knowledge of the principles of operation of schemes, structures, design and manufacture of systems and units that are part of the aircraft power plant.	ЗК3 ЗК 4 ЗК 5 ЗК 6 ЗК 7 ЗК 8 ЗК 10 ЗК11 ЗК12	ФК3 ФК4 ФК5 ФК9 ФК10 ФК11 ПРН4 ПРН5 ПРН7 ПРН9 ПРН10 ПРН11 ПРН13 ПРН15 ПРН16

					ПРН17 ПРН19 ПРН23
35	**ОК29**	Theory and computation of impeller machines (Теорія і розрахунок лопатевих машин)	**Purpose:** mastering the basic principles of the theory of bladed machines of gas turbine engines. **Task:** to study the principles of operation of blade machines of different types, basic equations and relations that reflect gas-thermodynamic processes in the flowing purities of blade machines.	ЗК7 ЗК8 ЗК11 ЗК12	ФК3 ФК4 ФК7 ПРН4 ПРН5 ПРН8 ПРН9 ПРН12 ПРН15
36	**ВБ1.2**	Technologies of Engineering Materials (Технології конструкційних матеріалів к. 104)	**Purpose:** to provide knowledge about the significance of the field of use, physico-chemical, technological features of the processes of manufacturing blanks (parts) by processing metals by different methods. **Task:** to teach to apply knowledge in practice in the development of modern methods of production of workpieces, parts, assemblies, units.	ЗК8 ЗК11 ЗК12	ФК3 ФК6 ФК11 ПРН12 ПРН15 ПРН21 ПРН26
37	**ВБ1.11**	Hydraulics (Гідравліка)	Purpose: mastering the basic principles of hydraulics. **Task:** the influence of different geometric and kinematic characteristics on the hydrostatic and hydrodynamic parameters of the flow, as well as the influence of geometric parameters on the operation of pumps and units of aircraft systems.	ЗК7 ЗК8	ФК2 ПРН4 ПРН13 ПРН19
38	**ВБ1.12** **ВБ2.3**	Structure and Strength of Aircraft (Конструкція і міцність літальних апаратів)	**Purpose:** to give students knowledge about the design of aircraft on the load of structural elements of the glider and aircraft and helicopter 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 necessary level of knowledge about the load of the glider structure and aircraft and helicopter systems, the operation of units under load, their design features and strength calculations in the glider structure, their design and power schemes (DPS), assumptions and design and technological implementation .	ЗК1 ЗК3 ЗК7 ЗК11 ЗК12	ФК2 ФК3 ФК4 ФК5 ФК7 ФК9 ФК10 ФК11 ПРН1 ПРН3 ПРН4 ПРН5 ПРН7 ПРН8 ПРН9 ПРН10 ПРН11 ПРН12 ПРН13 ПРН15 ПРН16 ПРН26
39	**ВБ2.8**	Computer Systems for Aircraft	**Purpose:** to form in students the scientific base and practical knowledge of the principles and provisions of technologies of continuous	ЗК4 ЗК5	ФК4 ФК6

		Life Cycle Provision (Комп'ютерні системи забезпечення життевого циклу повітряних суден)	information support of life cycle (LC) of aircraft, aircraft standards, CALS-technologies, the main components of CALS-technologies and approaches to their implementation, languages and software implement CALS-technologies and issues of practical application of CALS-technologies on the example of computer integrated system CAD / CAM COMPASS. **Task:** the main objectives of the discipline are to teach students the theoretical foundations and scientific methods of using technologies of continuous information support of life cycle (LC) of aircraft (AF), as well as practical acquaintance of students with the main aspects of creating electronic models.	ЗК7 ЗК11 ЗК12	ФК7 ФК9 ФК10 ФК11 ПРН3 ПРН7 ПРН19 ПРН23 ПРН24 ПРН25 ПРН26
40	**ВБ2.12**	Hydropneumatic Devices of Aircraft Engineering (Гідропневмопристрої авіаційної техніки)	**Purpose:** formation of a system of knowledge on the basics of fluid dynamics and performance of hydraulic calculations. **Task:** to gain knowledge of the basics of fluid dynamics and skills in solving specific engineering problems of design, hydraulic and pneumatic devices and systems.	ЗК5 ЗК11 ЗК12	ФК2 ФК5 ФК9 ФК10 ФК11 ПРН4 ПРН11 ПРН13 ПРН23 ПРН24 ПРН25 ПРН26
VI semester					
41	**ОК13**	Fundamentals of Machinery Design CP (Деталі машин та основи конструювання КП)	**Purpose:** to gain experience and practical skills in solving problems related to the design of parts and components of aerospace technology. **Task:** calculations and design of one of the components of aircraft engines, helicopters, design of drives of technological equipment.	ЗК6 ЗК7 ЗК8	ФК3 ФК4 ПРН4 ПРН8 ПРН9 ПРН10 ПРН15 ПРН17
42	**ОК28**	Theory and computation of impeller machines (CP) (Теорія і розрахунок лопатевих машин(КР))	**Purpose:** application of the theory of bladed machines of gas turbine engines in the design of stages and multistage compressors and turbines and the development of control systems. **Task:** the ability to choose the parameters at the design stage, to perform them on the basis of calculations sketch designs of bladed machines of gas turbine engines.	ЗК7 ЗК8	ФК3 ФК4 ФК7 ПРН4 ПРН5 ПРН8 ПРН9 ПРН12 ПРН15
43	**ОК29**	Theory and computation of impeller machines (Теорія і розрахунок лопатевих	**Purpose:** mastering the basic principles of the theory of bladed machines of gas turbine engines. **Task:** to study the principles of operation of blade machines of different types, basic equations and relations that reflect gas-	ЗК7 ЗК8	ФК3 ФК4 ФК7 ПРН4 ПРН5 ПРН8

		машин)	thermodynamic processes in the flowing purities of blade machines.		ПРН9 ПРН12 ПРН15
44	**ОК31**	Theory of air-jet engines (Теорія повітряно-реактивних двигунів)	**Purpose:** knowledge of the basic provisions of the theory of bladed machines of gas turbine engines. **Task:** to study the principles of operation of blade machines of different types. Design and execute on the basis of calculations sketch designs of bladed machines of gas turbine engines.	ЗК7 ЗК8	ФК4 ФК5 ФК7 ПРН4 ПРН5 ПРН8 ПРН9 ПРН12 ПРН15
45	**ОК35**	Practical Training (Виробнича практика)	**Purpose:** to provide an information and production base for the implementation of the bachelor's thesis project. **Task:** to make the design and technological analysis of the set detail.	ЗК1 ЗК 5 ЗК 6 ЗК 7 ЗК 8	ФК3 ФК5 ФК6 ФК7 ПРН8 ПРН10 ПРН12 ПРН14 ПРН15 ПРН17 ПРН20 ПРН21
46	**ОК23** **ВБ2.2**	Aircraft Ground Maintenance Technologies (Технології наземного обслуговування повітряних суден)	**Purpose:** mastering the basic provisions for the organization of technical operation of ANT, maintenance and repair of aircraft using ANT, maintaining a given level of reliability and flight safety. **Task:** mastering the scientific base in the field of organization and implementation of processes of technical operation of air transport; consolidation of previously acquired knowledge in the 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 work; intensification of education and preparation of the student for the choice of branch and specialty of practical activity in new market conditions.	ЗК5 ЗК6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК4 ФК6 ФК7 ФК8 ФК9 ФК10 ФК11 ПРН2 ПРН21 ПРН22 ПРН23 ПРН24 ПРН25 ПРН26
47	**ВБ1.7**	Design and strength of AE and PP (Конструкція і міцність АД і ЕУ)	**Purpose:** formation of initial ideas about the design and strength of AE and PP, gaining knowledge on the design of aircraft gas turbine engines. **Task:** knowledge of the loads of the main structural elements of the engine and methods of calculating their strength.	ЗК1 ЗК2 ЗК3 ЗК4 ЗК5 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК2 ФК3 ФК4 ФК5 ФК7 ФК9 ФК10 ПРН1 ПРН3 ПРН4

					ПРН5 ПРН7 ПРН8 ПРН9 ПРН10 ПРН11 ПРН12 ПРН13 ПРН15 ПРН16 ПРН17 ПРН19 ПРН23 ПРН24
48	**ВБ1.9**	Engine manufacturing technology (Технологія двигунобудування)	**Purpose:** technological training of specialists in the field of aircraft engine construction using computer technology. **Task:** to acquire knowledge about the formation of surfaces and methods of processing parts on metal-cutting machines and to obtain initial information about CNC machines.	ЗК 6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК3 ФК4 ФК5 ПРН4 ПРН8 ПРН10 ПРН12 ПРН14 ПРН15 ПРН17 ПРН20 ПРН21
49	**ВБ2.6**	Aircraft Operating Life and Durability (Ресурс та довговічність авіаційної техніки)	**Purpose:** to form students' scientific base, theoretical and practical knowledge in the field of organization and implementation of processes aimed at maintaining, preserving and restoring the airworthiness of flying vehicles (FV), including aircraft and helicopters, on the criterion of resource and fatigue life of their structures. **Task:** students gain knowledge about modern methods of determining the resource of aircraft structures; on the provision and maintenance of fatigue life, survivability and resource in general of aircraft (aircraft and helicopters); acquaintance with the main provisions of the "Air Code of Ukraine", Standards of airworthiness of aircraft and helicopters, certification of aircraft; consolidation of previously acquired knowledge in the following disciplines: basics of aerospace technology; theoretical mechanics; general design of aircraft and aircraft engines, technical operation of aircraft, etc .; activating the motivation to study and prepare the student to choose a place of practical activity in the new market conditions.	ЗК6 ЗК7 ЗК9 ЗК10 ЗК11 ЗК12	ФК6 ФК7 ФК9 ФК10 ФК11 ПРН3 ПРН8 ПРН9 ПРН10 ПРН17 ПРН23 ПРН24 ПРН25 ПРН26
50	**ВБ2.9**	Flight Dynamics (Динаміка полету)	**Purpose:** knowledge of calculating and predicting the behavior of the aircraft under the action of a set of forces acting on it in flight.	ЗК 3 ЗК 6 ЗК7	ФК1 ФК2 ПРН4

			Task: to know the laws of motion of a body of variable mass, the equation of thrust, the characteristics of the methods of convergence and their features, balancing and stability of the aircraft.	ЗК8 ЗК10 ЗК11 ЗК12	ПРН8 ПРН10 ПРН11 ПРН14 ПРН17 ПРН23
51	**ВБ2.10**	Fundamentals of Aircraft Manufacturing and Maintenance (Основи технології виробництва і ремонту повітряних суден)	**Purpose:** to study the technological systems of modern production and repair of aircraft, modern technological processes, equipment and means of technological equipment for the manufacture and repair of aircraft. **Task:** study of technological systems as part of production and repair systems of modern aircraft and rocketry, their structures, basic characteristics and indicators; objects of technological transformations and technological requirements to designs of aircraft; modern technological processes, equipment and means of technological equipment for the manufacture and repair of aircraft.	ЗК 6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК5 ФК6 ФК9 ФК10 ФК11 ПРН4 ПРН8 ПРН10 ПРН12 ПРН14 ПРН15 ПРН23 ПРН24 ПРН25 ПРН26
52	**ВБ2.14**	Simulation of Aircraft Operation Processes and Systems (Моделювання експлуатаційних процесів і систем повітряних суден)	**Purpose:** to gain knowledge of modern methods of design, construction and modeling of aerospace technology using computer integrated systems CAD / CAM / CAE and skills in CAD / CAM / CAE CATIA V5. **Task:** the study of the discipline is to provide students with knowledge about the modern use of methods for designing structures of aircraft using the system CAD / CAM / CAE CATIA V5.	ЗК4 ЗК5 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК5 ФК7 ФК9 ФК11 ПРН3 ПРН7 ПРН8 ПРН15 ПРН17 ПРН23
VII semester					
53	**ОК1**	Language Training (Мовна підготовка)	**Purpose**: mastering knowledge of a foreign language to study specialties in a foreign language. **Task:** to study the basic terms of the specialty with the help of a foreign language.	ЗК2 ЗК8	ПРН1 ПРН4 ПРН5
54	**ОК24**	Design and dynamics of AE and PP (Конструкція і динаміка АД і ЕУ)	**Purpose:** the acquisition by applicants of knowledge on the design of aircraft engines. The problem of formation at applicants of initial representations about models of strength reliability of elements of AE on the basis of previously studied theoretical courses is solved. **Task:** to study a theoretical course, to perform laboratory and practical works and a course project "Compressor GTE".	ЗК1 ЗК2 ЗК4 ЗК 6 ЗК 7 ЗК 8 ЗК10 ЗК11 ЗК12	ФК1 ФК2 ФК3 ФК4 ФК5 ФК7 ПРН4 ПРН5 ПРН7 ПРН8 ПРН9 ПРН10 ПРН11

					ПРН12 ПРН14 ПРН15 ПРН16 ПРН17 ПРН19 ПРН23 ПРН26
55	**ОК26**	Engines and Power plants Manufacturing Technology (Технологія виробництва двигунів та енергетичних установок)	**Purpose:** understanding and mastering the technology of aircraft engine production. **Task:** to obtain information on the design of technological processes and to design operations of the technological process of manufacturing parts of aircraft engines.	ЗК6 ЗК7 ЗК8	ФК3 ФК4 ФК5 ПРН4 ПРН8 ПРН10 ПРН12 ПРН14 ПРН15 ПРН17 ПРН20 ПРН21
56	**ОК30**	Theory of air-jet engines (ТР) (Теорія повітряно-реактивних двигунів(КП))	**Purpose:** mastering the basic provisions of the theory of air-jet engines in practice when choosing parameters. **Knowledge**: study of the principle of operation of air-jet engines.	ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК3 ФК4 ФК7 ПРН4 ПРН5 ПРН8 ПРН9 ПРН12 ПРН15
57	**ВБ1.1**	Business Economics (Економіка підприємства)	**Purpose:** the formation of theoretical knowledge about the economic activity of the enterprise. **Task:** the formation of modern management thinking and a system of special knowledge in the field of management and economics of the enterprise.	ЗК4 ЗК 6 ЗК 7 ЗК 8	ФК8 ПРН4 ПРН22
58	**ВБ1.4** **ВБ2.4**	Aircraft Maintenance (Технічна експлуатація повітряних суден)	**Purpose:** mastering the basic provisions for the organization of maintenance, maintenance and repair of JSC, maintaining a given level of reliability and flight safety. **Task:** mastering the scientific base in the field of organization and implementation of processes of technical operation of air 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 aircraft 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	ЗК4 ЗК5 ЗК7 ЗК8 ЗК11 ЗК12	ФК7 ФК9 ФК10 ФК11 ПРН3 ПРН7 ПРН9 ПРН16 ПРН17 ПРН23 ПРН24 ПРН25 ПРН26

			branch and specialty of practical activity in new market conditions.		
59	**ВБ1.8**	Design of Aircraft Power Plants and Units (Проектування авіаційних силових установок і агрегатів)	**Purpose:** to provide the knowledge necessary for the development of structures, design and manufacture of systems and units that are part of the aircraft power plant. **Task:** development of the design of the fuel pump and injectors that are part of the aircraft power plant.	ЗК3 ЗК4 ЗК5 ЗК6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК3 ФК4 ФК5 ФК9 ПРН4 ПРН5 ПРН7 ПРН9 ПРН10 ПРН11 ПРН13 ПРН15 ПРН16 ПРН17 ПРН19 ПРН23
60	**ВБ2.11**	Fundamentals of Aircraft Manufacturing and Maintenance (Основи технології виробництва і ремонту повітряних суден) (КП)	**Purpose:** to study the technological systems of modern production and repair of aircraft, modern technological processes, equipment and means of technological equipment for the manufacture and repair of aircraft. **Task:** study of technological systems as part of production and repair systems of modern aircraft and rocketry, their structures, basic characteristics and indicators; objects of technological transformations and technological requirements to designs of aircraft; modern technological processes, equipment and means of technological equipment for the manufacture and repair of aircraft.	ЗК6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК5 ФК6 ФК9 ФК10 ФК11 ПРН4 ПРН8 ПРН10 ПРН12 ПРН14 ПРН15 ПРН17 ПРН20 ПРН21 ПРН23 ПРН24 ПРН25 ПРН26
61	**ВБ2.13**	Principles of Aerospace Engineering Reliability (Основи надійності авіаційної техніки)	**Purpose:** the purpose of teaching the discipline "Fundamentals of Aviation Reliability (AR)" is to provide a stock of theoretical knowledge and practical skills in the field of ensuring, determining and controlling the reliability of aircraft and helicopters. **Task:** the main tasks of studying the discipline "Fundamentals of reliability of aircraft (FRA)" are to give knowledge about: - the need to ensure a high level of reliability of the FRA; requirements of aviation rules in this area to FRA for various purposes; basic terms and definitions of reliability and survivability of FRA; - constructive, technological and operational methods to increase the reliability and survivability of glider elements and FRA systems;	ЗК1 ЗК2 ЗК3 ЗК7 ЗК10 ЗК11 ЗК12	ФК2 ФК8 ФК9 ФК11 ПРН4 ПРН8 ПРН10 ПРН12 ПРН14 ПРН15 ПРН17 ПРН20 ПРН21 ПРН23 ПРН24

			- 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 FRA; - principles of software development used to determine the reliability and survivability of aircraft and helicopters; - the main experimental methods for determining the reliability and survivability of blood pressure, the main processes that occur in blood pressure damage and their consequences.		ПРН25 ПРН26
VIII semester					
62	**ОК21**	Aircraft piston engines (Авіаційні поршневі двигуни)	**Purpose:** to give the knowledge necessary for the design of reciprocating engines. **Knowledge:** study of the principles of operation of internal combustion engines, their classification, cycles of gasoline and diesel internal combustion engines.	ЗК3 ЗК4 ЗК5 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК3 ФК4 ФК7 ФК9 ПРН3 ПРН4 ПРН5 ПРН10 ПРН12 ПРН13 ПРН15 ПРН16 ПРН19 ПРН23
63	**ОК24**	Design and dynamics of AE and PP (Конструкція і динаміка АД і ЕУ)	**Purpose:** the acquisition by applicants of knowledge on the design of aircraft engines. The problem of formation at applicants of initial representations about models of strength reliability of elements of AE on the basis of previously studied theoretical courses is solved. **Task:** to study a theoretical course, to perform laboratory and practical works and a course project "Compressor GTE".	ЗК1 ЗК2 ЗК4 ЗК6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК1 ФК2 ФК3 ФК4 ФК5 ФК7 ПРН4 ПРН5 ПРН7 ПРН8 ПРН9 ПРН10 ПРН11 ПРН12 ПРН14 ПРН15 ПРН16 ПРН17 ПРН19 ПРН23
64	**ОК27**	Maintenance, repair and use of aircraft engines in land power plants	**Purpose:** to give knowledge in the field of working processes in elements of gas turbine engines of new knowledge on a design of elements of ground GTE. **Knowledge:** study of methods and approach-	ЗК5 ЗК6 ЗК7 ЗК8 ЗК10	ФК2 ФК5 ФК9 ФК10 ФК11

		(Експлуатація, ремонт та використання авіаційних двигунів у наземних установках)	es to the creation of highly efficient ground installations based on aircraft gas turbine engines.	ЗК11 ЗК12	ПРН4 ПРН5 ПРН8 ПРН13 ПРН18 ПРН19 ПРН23 ПРН24 ПРН25 ПРН26
65	**ВБ1.3**	Basics of Technical Diagnos (Основи технічної діагностики)	**Purpose:** the formation of students' competencies related to the basics of determining the technical condition of aircraft and AD in general, their elements and functional systems. **Task:** formation of knowledge: about the general concepts of technical diagnostics of FV and AE; methods of solving diagnostic problems; characteristics of the main elements of the diagnostic system; methods and means of diagnosing FV and AE in general, their elements and functional systems.	ЗК3 ЗК6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК1 ФК2 ФК7 ФК8 ФК10 ФК11 ПРН10 ПРН11 ПРН13 ПРН17 ПРН25 ПРН26
66	**ОК25**	Design, dynamics and strength of AE and PP (Конструкція, динаміка та міцність АД та ЕУ (КП)	**Purpose:** acquisition by applicants of knowledge on the design of aircraft gas turbine engines. **Task:** construction of various components of aircraft engines and individual parts (compressors, turbines, combustion chambers, etc.), loads of the main structural elements of the engine and methods of calculating their strength, structural materials.	ЗК1 ЗК2 ЗК4 ЗК6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК1 ФК2 ФК3 ФК4 ФК7 ПРН4 ПРН5 ПРН7 ПРН8 ПРН9 ПРН10 ПРН11 ПРН12 ПРН15 ПРН16
67	**ОК33**	Bachelor`s Graduate Work (Випускна робота бакалавра)	**Purpose:** to provide students with knowledge of the structure and order of graduation. **Task:** to study the standards, qualification requirements for bachelors and requirements for the order of registration and defense of the bachelor's thesis.	ЗК1 ЗК5 ЗК6 ЗК7 ЗК8	ФК3 ФК5 ФК6 ФК7 ПРН4 ПРН8 ПРН10 ПРН12 ПРН17 ПРН20 ПРН21
68	**ВБ1.4** **ВБ2.4**	Aircraft Maintenance (Технічна	**Purpose:** mastering the basic provisions for the organization of maintenance, maintenance	ЗК4 ЗК5	ФК7 ФК9

		експлуатація повітряних суден)	and repair of AT, maintaining a given level of reliability and flight safety. **Task:** mastering the scientific base in the field of organization and implementation of processes of technical operation of air 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 aircraft 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.	ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК10 ФК11 ПРН3 ПРН7 ПРН9 ПРН16 ПРН17 ПРН23 ПРН24 ПРН25 ПРН26
69	**ВБ2.5**	Aircraft Maintenance CP (Технічна експлуатація повітряних суден) (КР)	**Purpose:** mastering the basic provisions for the organization of maintenance, maintenance and repair of AT, maintaining a given level of reliability and flight safety. **Task:** mastering the scientific base in the field of organization and implementation of processes of technical operation of air 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 aircraft 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.	ЗК4 ЗК5 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК7 ФК9 ФК10 ФК11 ПРН3 ПРН7 ПРН9 ПРН16 ПРН17 ПРН23 ПРН24 ПРН25 ПРН26
70	**ВБ1.9**	Engine manufacturing technology (Технологія двигунобудування)	**Purpose:** technological training of specialists in the field of aircraft engine construction using computer technology. **Task:** to acquire knowledge about the formation of surfaces and methods of processing parts on metal-cutting machines and to obtain initial information about CNC machines.	ЗК6 ЗК7 ЗК8 ЗК10 ЗК11 ЗК12	ФК3 ФК4 ФК5 ФК9 ПРН4 ПРН8 ПРН10 ПРН12 ПРН14 ПРН15 ПРН17 ПРН20 ПРН21

4.HIGHER EDUCATION CERTIFICATION FORM

Attestation of graduates in the educational-professional program "Operational diagnostics, maintenance and repair of aircraft engines and EU" in the specialty 134 "Aviation and rocket and space technology" is carried out in the form of defense of bachelor's thesis and ends with the issu-

ance of a state document on bachelor's degree qualification: Bachelor of Aviation and Rocket and Space Engineering in the educational program "Operational diagnostics, maintenance and repair of aircraft engines and EU".

Certification is carried out openly and publicly.

5 TABLES OF COMPATIBILITY OF SOFTWARE COMPETENCES TO COMPONENTS
6 EDUCATIONAL PROFESSIONAL PROGRAM

Таблиця 5.1

Program competencies	Components of the educational program																																			
	ОК1	ОК2	ОК3	ОК4	ОК5	ОК6	ОК7	ОК8	ОК9	ОК10	ОК11	ОК12	ОК13	ОК14	ОК15	ОК16	ОК17	ОК18	ОК19	ОК20	ОК21	ОК22	ОК23	ОК24	ОК25	ОК26	ОК27	ОК28	ОК29	ОК30	ОК31	ОК32	ОК33	ОК34	ОК35
ЗК1		+																						+	+								+		+
ЗК2	+																							+	+										
ЗК3			+				+	+	+								+				+	+												
ЗК4										+											+	+		+	+										
ЗК5															+	+					+	+	+				+					+	+	+	+
ЗК6						+							+	+					+	+		+	+	+	+	+	+						+		+
ЗК7			+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ЗК8	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ЗК9		+																																	
ЗК10		+																				+		+		+	+			+					
ЗК11																						+	+	+		+	+		+	+					
ЗК12																						+	+	+		+	+		+	+					
ФК1																								+	+										
ФК2						+						+				+								+	+		+								
ФК3			+				+	+			+		+	+		+		+	+	+	+	+		+	+	+		+	+	+		+	+	+	+
ФК4					+	+			+		+		+	+				+	+	+	+	+	+	+	+	+		+	+	+	+			+	
ФК5				+		+									+	+	+					+		+		+	+				+	+	+		+
ФК6						+									+		+						+										+	+	+
ФК7										+	+	+											+	+	+			+	+	+	+		+	+	+
ФК8						+																	+												
ФК9																							+				+								
ФК10																							+				+								
ФК11																							+				+								

Continuation of Table 5.1

Program competencies	Components of the educational program																									
	ВБ1.1	ВБ1.2	ВБ1.3	ВБ1.4	ВБ1.5	ВБ1.6	ВБ1.7	ВБ1.8	ВБ1.9	ВБ1.10	ВБ1.11	ВБ1.12	ВБ2.1	ВБ2.2	ВБ2.3	ВБ2.4	ВБ2.5	ВБ2.6	ВБ2.7	ВБ2.8	ВБ2.9	ВБ2.10	ВБ2.11	ВБ2.12	ВБ2.13	ВБ2.14
ЗК1							+					+													+	
ЗК2							+																		+	
ЗК3			+				+	+		+		+	+		+				+		+			+	+	
ЗК4	+			+		+	+	+							+	+	+			+						
ЗК5				+	+	+	+	+					+	+	+	+	+		+	+					+		
ЗК6	+		+					+	+					+				+			+	+	+			+
ЗК7	+	+	+	+			+	+	+	+	+	+	+	+		+	+	+		+	+	+	+		+	+
ЗК8	+	+	+	+	+	+		+	+	+	+		+	+		+	+				+	+	+			+
ЗК9																		+								
ЗК10			+	+		+		+	+					+	+	+	+	+			+	+	+		+	
ЗК11		+	+	+	+	+		+	+			+		+		+	+	+	+	+	+	+	+	+	+	
ЗК12		+	+	+	+	+		+	+			+		+		+	+	+		+	+	+	+	+	+	
ФК1			+																		+					
ФК2			+				+			+	+	+	+								+			+	+	
ФК3		+					+	+	+			+							+							
ФК4		+					+	+	+			+		+					+	+						
ФК5							+	+	+			+										+	+	+		+
ФК6					+	+								+				+		+		+	+			+
ФК7		+	+	+		+	+					+		+	+	+	+	+	+	+						
ФК8	+		+		+									+	+				+						+	
ФК9				+	+			+	+			+		+	+	+	+	+	+	+		+	+	+	+	+
ФК10			+	+	+							+		+		+	+	+	+	+			+	+	+	
ФК11		+	+	+	+							+		+		+	+	+		+			+	+	+	

6 6 TABLE OF COMPLIANCE OF THE PROGRAM LEARNING RESULTS (PLR) WITH THE RELEVANT COMPONENTS OF THE EDUCATIONAL PROFESSIONAL PROGRAM

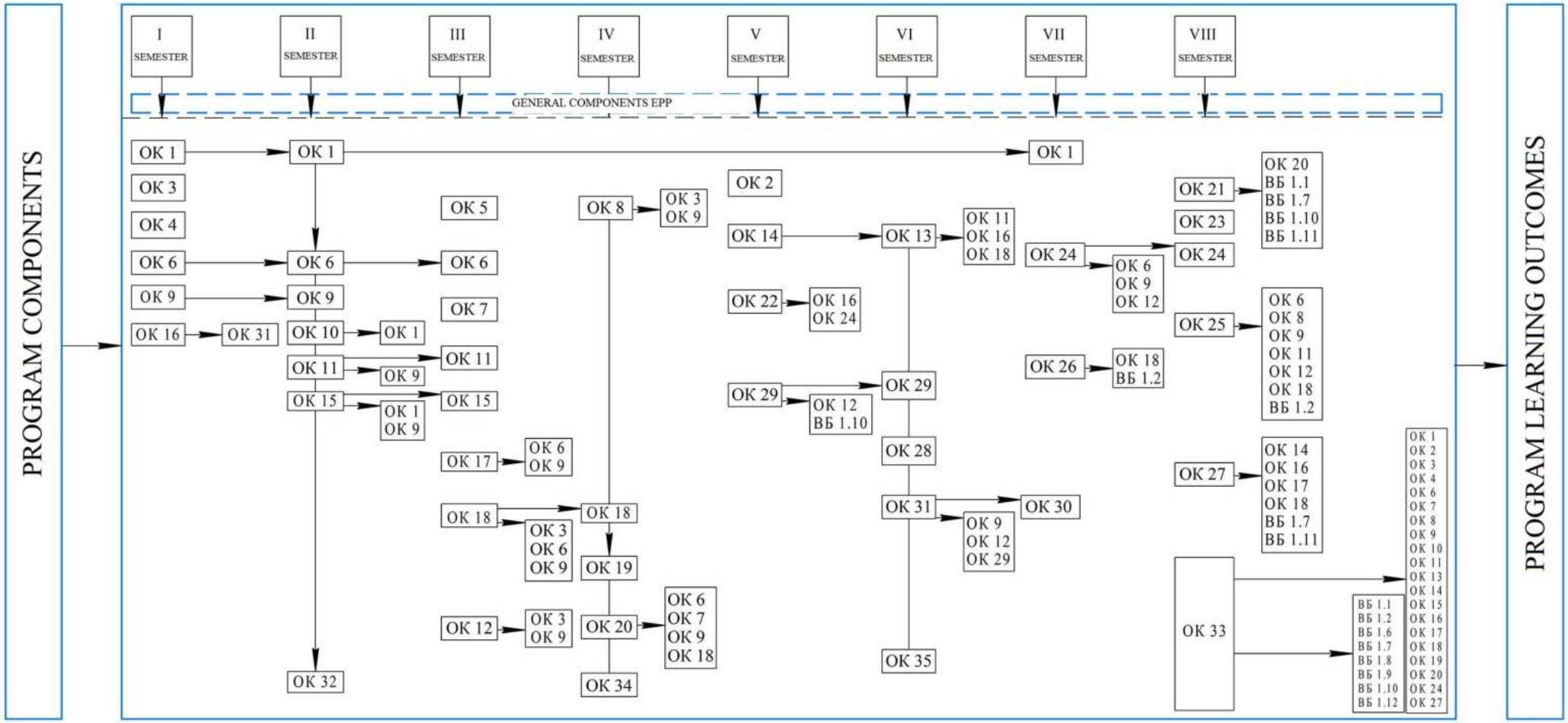
Table 6.1

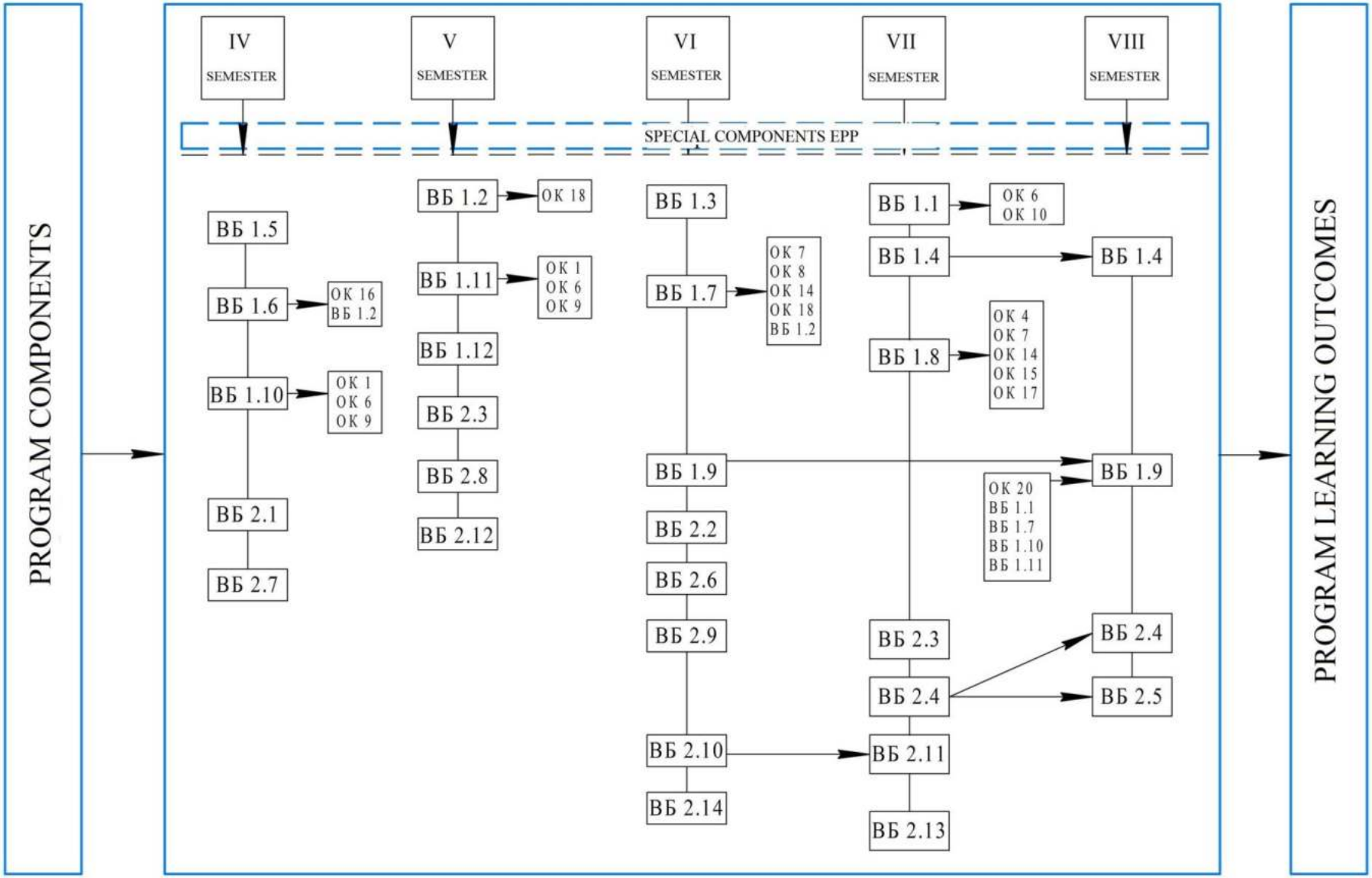
Program learning out-comes	Components of the educational program																																		
	ОК1	ОК2	ОК3	ОК4	ОК5	ОК6	ОК7	ОК8	ОК9	ОК10	ОК11	ОК12	ОК13	ОК14	ОК15	ОК16	ОК17	ОК18	ОК19	ОК20	ОК21	ОК22	ОК23	ОК24	ОК25	ОК26	ОК27	ОК28	ОК29	ОК30	ОК31	ОК32	ОК33	ОК34	ОК35
ПРН1	+	+																																	
ПРН2							+	+																											
ПРН3										+		+									+													+	
ПРН4	+		+		+	+	+	+	+		+	+	+	+			+	+	+	+	+	+		+	+	+	+	+	+	+	+		+	+	
ПРН5	+								+												+	+		+	+		+	+	+	+	+				
ПРН6																																			
ПРН7		+																				+		+	+										
ПРН8				+			+	+					+	+	+				+	+				+	+	+	+	+	+	+	+	+	+		+
ПРН9													+	+		+		+	+	+		+		+	+			+	+	+	+	+			
ПРН10									+				+	+					+	+	+	+		+	+	+							+		+
ПРН11									+													+		+	+										
ПРН12			+				+	+	+												+			+	+	+		+	+	+	+		+	+	+
ПРН13			+						+												+						+								
ПРН14						+	+	+																+		+									+
ПРН15				+									+	+		+			+	+	+	+		+	+	+		+	+	+	+	+		+	+
ПРН16						+															+	+		+	+										
ПРН17				+							+		+	+	+		+	+	+	+		+		+		+					+	+	+	+
ПРН18					+																						+								
ПРН19									+			+			+	+					+	+		+			+					+			
ПРН20				+													+									+							+	+	+
ПРН21				+		+	+	+	+						+	+	+	+								+						+	+	+	+
ПРН22						+																													
ПРН23																+						+		+			+								
ПРН24																+											+								
ПРН25																											+								
ПРН26						+										+										+	+								

Continuation of table 6.1

Program learning outcomes	Components of the educational program																									
	ВБ1.1	ВБ1.2	ВБ1.3	ВБ1.4	ВБ1.5	ВБ1.6	ВБ1.7	ВБ1.8	ВБ1.9	ВБ1.10	ВБ1.11	ВБ1.12	ВБ2.1	ВБ2.2	ВБ2.3	ВБ2.4	ВБ2.5	ВБ2.6	ВБ2.7	ВБ2.8	ВБ2.9	ВБ2.10	ВБ2.11	ВБ2.12	ВБ2.13	ВБ2.14
ПРН1							+					+														
ПРН2														+					+							
ПРН3				+		+	+			+		+	+			+	+	+		+						+
ПРН4	+	+				+	+	+	+	+	+	+	+		+						+	+	+	+	+	
ПРН5		+				+	+	+				+							+							
ПРН6																										
ПРН7				+			+	+				+			+	+	+			+						+
ПРН8		+					+	+	+			+						+			+	+	+		+	+
ПРН9		+		+			+	+				+				+	+	+								
ПРН10			+		+	+	+	+	+			+						+			+	+	+		+	
ПРН11			+				+					+									+			+		
ПРН12		+			+		+		+			+										+	+		+	
ПРН13			+				+	+			+	+												+		
ПРН14									+										+		+	+	+		+	
ПРН15		+					+	+	+			+										+	+		+	+
ПРН16				+		+	+	+				+				+	+									
ПРН17			+	+			+	+	+							+	+	+			+		+		+	+
ПРН18																										
ПРН19							+	+		+	+		+							+						
ПРН20									+														+		+	
ПРН21		+							+					+									+		+	
ПРН22	+													+												
ПРН23				+	+		+	+						+		+	+	+	+	+	+	+	+	+	+	+
ПРН24				+	+		+							+		+	+	+	+	+		+	+	+	+	
ПРН25			+	+										+		+	+	+	+	+		+	+	+	+	
ПРН26		+	+	+								+		+	+	+	+	+	+	+		+	+	+	+	

APPENDIX A
STRUCTURAL AND LOGICAL SCHEME OF THE EDUCATIONAL PROFESSIONAL PROGRAM




PROGRAM COMPONENTS
IV SEMESTER
V SEMESTER
VI SEMESTER
VII SEMESTER
VIII SEMESTER
SPECIAL COMPONENTS EPP
ВБ 1.5
ВБ 1.6
ОК 16
ВБ 1.2
ВБ 1.10
ОК 1
ОК 6
ОК 9
ВБ 2.1
ВБ 2.7
ВБ 1.2
ОК 18
ВБ 1.11
ОК 1
ОК 6
ОК 9
ВБ 1.12
ВБ 2.3
ВБ 2.8
ВБ 2.12
ВБ 1.3
ВБ 1.7
ОК 7
ОК 8
ОК 14
ОК 18
ВБ 1.2
ВБ 1.9
ВБ 2.2
ВБ 2.6
ВБ 2.9
ВБ 2.10
ВБ 2.14
ВБ 1.1
ОК 6
ОК 10
ВБ 1.4
ВБ 1.8
ОК 4
ОК 7
ОК 14
ОК 15
ОК 17
ОК 20
ВБ 1.1
ВБ 1.7
ВБ 1.10
ВБ 1.11
ВБ 2.3
ВБ 2.4
ВБ 2.11
ВБ 2.13
ВБ 1.4
ВБ 1.9
ВБ 2.4
ВБ 2.5
PROGRAM LEARNING OUTCOMES