

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
LVIV POLYTECHNIC NATIONAL UNIVERSITY**



«APPROVED»

Act. rector

of Lviv Polytechnic National University

/Yrii BOBALO/

« 11 » 03 2025

EDUCATIONAL-SCIENTIFIC PROGRAMME

“Motor Vehicle Transport”

of the third (educational-scientific) level of higher education

by specialty J8 Motor Vehicle Transport

of field of knowledge J Transport and services

Qualification: Doctor of Philosophy in Motor Vehicle Transport

Considered and approved by
University Academic Council

protocol No. 20

from «25» 02 2025

Lviv — 2025

AGREEMENT LETTER

Of educational and scientific program

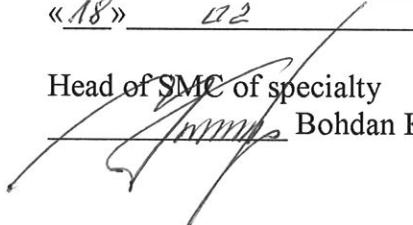
High Education level
Knowledge field
Specialty
Qualification

Third (educational-scientific)
J Transport services
J8 Motor Vehicle Transport
Philosophy Doctor of Motor Vehicle Transport

DEVELOPED AND APPROVED


By scientific and methodical commission of
«Automotive transport» specialty

Protocol No. 1
«18» 02 2025

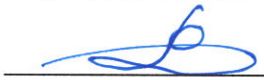
Head of SMC of specialty
 Bohdan KINDRATSKYY

APPROVED


Vice-rector of Scientific Research

 Ivan DEMYDOV
«20» 02 2025

Vice-rector of Scientific-Pedagogical Work

 Oleh DAVYDCHAK
«20» 02 2025


Head of the Educational and Methodological
Department of the University

 Vasyl TOMIUK
«18» 02 2025

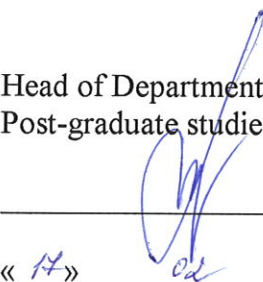
RECOMMEND

By scientific and methodical council
of university

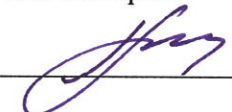
Protocol No. 85
«20» 02 2025

Head of SMC of the university
 Anatolii ZAGORODNII

Head of Department of Doctoral and
Post-graduate studies

 Olena MUKAN
«18» 02 2025

Director of Institute of Mechanical Engineering
and Transport

 Roman KACHMAR
«18» 02 2025

PREFACE

It was developed by the working group for ensuring educational and scientific program quality, according to which studying of applicants at the third (educational and scientific) level of higher education in the specialty J8 Motor Vehicle Transport is carried out as part of:

**Head of the working group
(guarantor):**

Bohdan KINDRATSKYY Doctor of Sciences, professor, head of motor vehicle transport department

Members:

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Igor DMYTRIV Candidate of Technical Sciences, associate professor, associate professor of motor vehicle transport department

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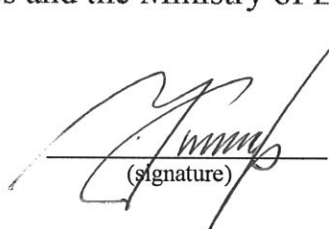
Roman KACHMAR Candidate of Technical Sciences, associate professor, associate professor of motor vehicle transport department

Yurii POROHOVSKIY Candidate of Technical Sciences, associate professor, associate professor of motor vehicle transport department

Nadila ZINKEVYCH general director of UKRAVTO Lviv

Oleh ZYNIUK Candidate of Technical Sciences, associate professor, Director of the Western Scientific Center of the National Academy of Sciences and the Ministry of Education of Ukraine

Guarantor
Doctor of Sciences, professor


(signature) Bohdan KINDRATSKYY

Approved and brought into force
by order of the acting rector of Lviv Polytechnic National University
from « 11 » 03 2025 No. 146-1-10.

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I. EDUCATIONAL COMPONENT OF THE EDUCATIONAL AND SCIENTIFIC PROGRAM

1. Profile of the Doctor of Philosophy program by specialty J8 Motor Vehicle Transport

1. General information	
Full name of the higher education institution and structural unit	Lviv Polytechnic National University Department of Motor Vehicle Transport
Level of higher education	Third (educational-scientific) level
Degree of higher education	Doctor of Philosophy
The full title of the qualification in the original language	Doctor of Philosophy in Motor Vehicle Transport
The official name of the educational and scientific program	Motor Vehicle Transport
Type of diploma and scope of the educational-scientific program	Diploma of Doctor of Philosophy, single, 43 ECTS credits of the educational and scientific program educational component, the time of the educational and scientific program educational component is 2 years
Forms of education	Full-time, part-time
Availability of accreditation	—
Cycle/level	8th level of Ukraine NQF, third cycle of FQ-EHEA, 8th level of EQF-LLL
Prerequisites	Master level of higher education in the specialty J8 Motor Vehicle Transport
Language(s) of teaching	Ukrainian
Basic concepts and their definitions	The educational and scientific program uses the main concepts and their definitions in accordance with the Law of Ukraine "On Higher Education" dated 07/01/2014 No. 1556-VII as amended, the Law of Ukraine "On Scientific and Scientific and Technical Activities" dated 11/26/2015 No. 848-VIII with changes and additions, Order of higher education applicants for the degree of doctor of philosophy and doctor of sciences in higher educational institutions (scientific institutions), approved by Resolution of the Cabinet of Ministers No. 261 dated 03/23/2016, with changes
2. The purpose of the educational and scientific program	
	To deepen theoretical knowledge, practical skills and abilities in the field of Transport services with a specialization in Motor vehicle transport, to develop philosophical and linguistic competences, to form universal skills of a researcher, sufficient for the conduct and successful completion of scientific research and further professional and scientific activities
3. Characteristics educational and scientific programs	
Subject area (field of knowledge, specialty)	Field of knowledge is J Transport services, specialty J8 Motor vehicle transport
Orientation of the educational and	The educational and scientific program is based on fundamental postulates mechanics and the results of modern scientific research in the field of

scientific program	management, operation and service of road transport. It is aimed at the development of the theoretically methodological and methodologically applied base of transport with focusing on the latest trends in the development of transport, which deepens the professional scientific outlook and provides the basis for conducting scientific research and further professional and scientific activities
Description of the subject area	<p><i>Object(s) of study and/or activity:</i> functioning and development of road transport, creation and improvement of vehicles and systems.</p> <p><i>Learning objectives:</i> acquiring the ability to produce new ideas, solve complex problems of professional and/or research and innovation activities in the field of road transport, mastering the methodology of scientific and pedagogical activity, conducting one's own scientific research, the results of which have scientific novelty and practical significance.</p> <p><i>Theoretical content of the subject area:</i> principles, concepts, theories of the functioning of road transport.</p> <p><i>Methods, techniques and technologies:</i> analytical, numerical and experimental methods of studying the functioning of road transport, assessing its efficiency and reliability.</p> <p><i>Tools and equipment:</i> specialized computer and software, multimedia tools, measuring and diagnostic devices, full-scale samples and models of road vehicles and units.</p>
The main focus of the educational-scientific program	<p>The educational and scientific program provides language competencies and universal skills of the researcher, in-depth knowledge in the field of road transport.</p> <p>Keywords: foreign language, philosophy, scientific foundations, pedagogy, road transport, road transportation, quality management.</p>
Features of the program	The educational component of the program is implemented over 4 semesters, with a duration of 43 credits and has disciplines in the corresponding two cycles that provide: language competences, universal skills of a researcher, knowledge in the chosen specialty, as well as disciplines of free choice, in particular from master's programs.
4. Suitability graduates to employment and further education	
Suitability for employment	Jobs in public and private higher education institutions, scientific and research institutions as teachers and researchers, in enterprises and organizations of various types of activities and forms of ownership in manager positions
Academic rights of graduates	Obtaining a PhD degree and acquiring additional qualifications in the adult education system.
5. Teaching and assessment	
Teaching and learning	A combination of lectures and practical classes, pedagogical practice, consulting with a scientific supervisor, a scientific and pedagogical community, and independent scientific and educational work
Assessment	Exams, credits, current control
6. Software competencies	
Integral competence (INT)	The ability to produce innovative scientific ideas, to master the methodology of scientific and pedagogical activity, to solve complex problems in the process of innovative research and professional activity, to conduct original scientific research in the field of transport at the international and national level.
General competences	GC 01.Mastering general scientific (philosophical) competences aimed

(GC)	<p>at forming a systematic scientific worldview, professional ethics and a general cultural worldview; application of modern information technologies in scientific activities (work with scientific metric databases, automatic generation of links to literary sources, etc.).</p> <p>GC 02. Acquisition of linguistic competences sufficient to present and discuss the results of one's scientific work in a foreign language in oral and written form, as well as to fully understand foreign language scientific texts in the relevant specialty, use of modern information technologies (presentation of scientific results).</p> <p>GC 03. Acquisition of universal skills of a researcher, in particular, organization and conduct of training sessions, use of modern information technologies (working with virtual education environment (VEE), Microsoft Teams, Zoom, etc.).</p> <p>GC 04. Acquisition of universal researcher skills, in particular speaking and written presentation of the results of one's own research in Ukrainian, management of scientific projects and/or preparation of proposals for financing scientific research, registration of intellectual property rights, application of modern information technologies.</p> <p>GC 05. Acquisition of universal skills of a researcher, in particular, organization and conduct of training sessions, use of modern information technologies (working with VEE, Microsoft Teams, Zoom, etc.).</p>
Special (professional) competences (PC)	<p>SC 01. Acquiring in-depth knowledge of the specialty in which the graduate student conducts research, in particular, assimilation of basic concepts, understanding of theoretical and practical problems, the history of development and the current state of scientific knowledge in the chosen specialty, mastering the terminology of the researched scientific direction.</p> <p>SC 02. Thorough knowledge of the optimal management methods of the working condition maintaining processes of the fleet of motor vehicles and designing the appropriate system for their effective operation.</p> <p>SC 03. In-depth knowledge of the patterns of changes in the technical condition of the fleet of motor vehicles, methods of maintaining a serviceable technical condition, the methodology of forming a system of indicators of their reliability.</p> <p>SC 04. Ability to apply knowledge of methods of analysis, synthesis and optimization of complex objects and systems using modern information technologies.</p> <p>SC 05. Deep knowledge operational properties, natural and mathematical modeling of intelligent car systems.</p> <p>SC 06. Thorough knowledge of the regulatory and legal basis of decommissioning cars, methods and technologies of recycling and disposal of operating fluids, materials, parts and units of the car.</p> <p>SC 07. Knowledge of ways to improve the operational properties of devices and devices of automotive on-board automation, a complex of automated means that ensure the receipt, transformation and transmission of information for remote control of the technical condition and functioning of automotive vehicles.</p> <p>SC 09. Thorough knowledge of the theory of calculation of working processes and indicators of operational efficiency of hybrid and electric cars, features of their diagnosis, maintenance and repair.</p> <p>SC 10. Acquiring in-depth knowledge of the theory of mechanical vibrations, the methodology of research of vibrational phenomena in</p>

	drives and suspension systems of cars, dynamics of movement, stability and controllability of vehicles. SC 11. Knowledge of modern methods of planning an experiment, conducting it and processing the obtained results.
7. Program learning outcomes	
Learning outcomes (LO)	<p>LO 01. Ability to demonstrate in-depth knowledge of historical and modern conceptual-methodological and methodical foundations of transport.</p> <p>LO 02. Ability to demonstrate in-depth knowledge of domestic and foreign research and practical experience in the field of transport.</p> <p>LO 03. Ability to demonstrate in-depth knowledge of processes receiving, transforming and transmitting information for remote control of the technical condition and motor vehicles functioning.</p> <p>LO 04. The ability to demonstrate in-depth knowledge and understanding in the field of real-life and mathematical modeling of intelligent car systems, planning and conducting experiments.</p> <p>LO 05. The ability to demonstrate knowledge and understanding of the philosophical methodology of scientific knowledge, psychological and pedagogical aspects of professional and scientific activity, one's own scientific outlook and moral and cultural values.</p> <p>LO 06. The ability to demonstrate sufficient knowledge of the English language, necessary for oral and written presentation of the results of scientific research, conducting a professional scientific dialogue, full understanding of English-language scientific texts.</p> <p>LO 07. The ability to develop methods and technologies of recycling and disposal of operating fluids, materials, car parts and units.</p> <p>LO 08. Ability to develop, plan and implement methods of safe activity in the field of road transport.</p>
8 – Descriptors of the National qualifications framework	
Knowledge (KN)	Conceptual and methodological knowledge in a field or at the boundary of fields of knowledge or professional activity.
Skills (SK)	<p>SK 01. Choose and apply the methodology and tools of scientific research when conducting theoretical and empirical research in the field of transport.</p> <p>SK 02. Conduct scientific research and implement scientific projects based on the identification of current scientific problems, definition of goals and objectives, formation and critical analysis of the information base, substantiation and commercialization of research results, formulation of author's conclusions and proposals.</p> <p>SK 03. Develop a system for maintaining the working condition of the fleet of motor vehicles.</p> <p>SK 04. Solve scientific and applied problems and make informed decisions in the field of transport.</p> <p>SK 05. Develop and apply information transfer standards and protocols for remote monitoring of the technical condition and functioning of motor vehicles.</p> <p>SK 06. Carry out real-life and mathematical modeling of intelligent car systems using modern methods and tools.</p> <p>SK 07. To develop methods and technologies of recycling and disposal of operating fluids, materials, parts and units of the car.</p> <p>SK 08. Conduct a scientific conversation and discussion in Ukrainian and English at an appropriate professional level, present the results of</p>

	scientific research in oral and written form, organize and conduct training sessions.
Communication (C)	1. The ability to communicate in business scientific and professional language, to use different speech styles, communication methods and techniques, to demonstrate a wide scientific and professional vocabulary. 2. The ability to use modern information and communication tools and technologies to ensure effective scientific and professional communications.
Autonomy and responsibility (AaR)	1. Ability to independently conduct scientific research and make decisions. 2. Ability to formulate own author's conclusions, proposals and recommendations. 3. The ability to realize and bear personal responsibility for the obtained research results.
9. Resource support for the implementation of the educational program	
Specific characteristics of staffing	100% of scientific and pedagogical workers involved in teaching a cycle of disciplines that provide special (professional) competencies of a graduate student have scientific degrees and academic titles.
Specific characteristics of material and technical support	Use of modern software: MATLAB, Simulink, Mathcad, Autodesk AutoCAD, Microsoft Teams, Zoom (Video Communications)
Specific characteristics of informational and methodological support	The use of the virtual learning environment of the Lviv Polytechnic National University and author's developments of research and teaching staff
10. Academic mobility (Regulated by Resolution of the Cabinet of Ministers of Ukraine No. 579 "On Approval of the Regulations on the Procedure for the Implementation of the Right to Academic Mobility" dated August 12, 2015)	
National credit mobility	On the basis of bilateral contracts between Lviv Polytechnic National University and universities of Ukraine
International credit mobility	Within the framework of the EU Erasmus+ program on a bilateral basis contract between Lviv Polytechnic National University and educational institutions of partner countries
Education of foreign graduate students	It is possible after studying the Ukrainian language course

2. Distribution of the educational component content of the educational and scientific program by component groups and educational cycles

No a/o	Educational cycles	The amount of study load of a graduate student (credits / %)		
		Mandatory components of the educational component	Elective components of the educational component	In total for the entire teaching term
1	Cycle of disciplines that form general scientific competences and universal skills of the researcher	21/49	3/7	24/56
2	Cycle of disciplines forming professional competences	10/23	6/14	16/37
3	Cycle of subjects of free choice of a graduate student	–	3/7	3/7
Total for the entire period of study		31/72	12/28	43/100

3. List of parts of the educational component of the educational and scientific program

Code e/d	Parts of the educational component	Number of credits	Form summary control
Mandatory components of the educational component			
<i>Cycle of disciplines that form general scientific competences and universal skills of the researcher</i>			
MD1.1.	Philosophy and methodology of science	3	exam
MD1.2.	A foreign language for academic purposes, part 1	4	credit
MD1.3.	A foreign language for academic purposes, part 2	4	exam
MD1.4.	Professional pedagogy	3	credit
MD1.5.	Academic entrepreneurship	4	credit
MD1.6.	Pedagogical practice	3	not diff. credit
Total per cycle:		21	
<i>Cycle of disciplines forming professional competences*</i>			
MD2.1.	System analysis on transport	4	exam
MD2.2.	Research seminar in the field of transport	3	credit
MD2.3.	Modeling and optimization of road transport processes and systems	3	credit
Total per cycle:		10 (3+3+4)	
Elective components of the educational component			
<i>Cycle of disciplines that form general scientific competences and universal skills of the researcher*</i>			
SD1.1	Business Foreign Language	3	credit
SD1.2	Psychology of creativity and invention	3	credit
SD1.3	Management of scientific projects	3	credit
SD1.4	Technology of grant applications and patent rights registration	3	credit
SD1.5	Rhetoric	3	credit
SD1.6	Modern inventions in research activities	3	credit
SD1.7	Open scientific practices	3	credit
SD1.8	Academic integrity and quality of education	3	credit
SD1.9	Methodology of scientific publications preparation	3	credit
SD1.10	Quality of higher education (formation of internal quality assurance systems)	3	credit
Total per cycle:		3	

<i>Cycle of disciplines forming professional competences**</i>			
SD2.1	Scientific concepts of cars operation and maintenance organization	3	exam
SD2.2	Hybrid and electric vehicles	3	exam
SD2.3	Intelligent vehicle systems	3	exam
SD2.4	Autonics and telematics	3	exam
SD2.5	The latest technologies of recycling and disposal of cars	3	exam
SD2.6	Theory and practice of scientific research in the field of transport	3	exam
SD2.7	Sustainable development of road transport	3	exam
SD2.8	Innovative technologies in the automotive industry	3	exam
SD2.9	Theory of mechanical vibrations	3	exam
SD2.10	Planning the experiment and processing the obtained results	3	exam
Total per cycle:		6 (3+3)	
<i>Disciplines of the graduate student's free choice***</i>			
SD3.1	Discipline of the graduate student's free choice	3	
Total per cycle:		3	
Together:		43	

Note: * – pedagogical practicum can take place in the II or III year of study;

** – a graduate student can choose disciplines from clause 1.2; clause 2.2, clause 3 (selective and free-choice), while the share of these subjects must be at least 25% of the total number of ECTS credits.

*** – a postgraduate student has the opportunity to choose disciplines taught at the National University "Lviv Polytechnic" or other domestic (foreign) higher education institutions (scientific institutions) at all levels.

4. Matrix of correspondence of program competences

educational components

	MD1.1	MD1.2	MD1.3	MD1.4	MD1.5	MD1.6	MD2.1	MD2.2	MD2.3	SD1.1	SD1.2	SD1.3	SD1.4	SD1.5	SD1.6	SD1.7	SD1.8	SD1.9	SD1.10	SD2.1	SD2.2	SD2.3	SD2.4	SD2.5	SD2.6	SD2.7	SD2.8	SD2.9	SD2.10
INT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GC1	+																+												
GC2		+	+							+								+											
GC3				+										+															
GC4					+											+				+									
GC5						+													+										
PC1							+	+	+											+	+	+	+	+	+	+	+	+	+
PC2																					+	+	+	+	+	+	+	+	+
PC3																					+	+	+	+	+	+	+	+	+
PC4																					+	+	+	+	+	+	+	+	+
PC5																					+	+	+	+	+	+	+	+	+
PC6																					+	+	+	+	+	+	+	+	+
PC7																					+	+	+	+	+	+	+	+	+
PC8																					+	+	+	+	+	+	+	+	+
PC9																					+	+	+	+	+	+	+	+	+
PC10																					+	+	+	+	+	+	+	+	+

Description: MDi is a mandatory discipline, SDi is a selective discipline, i is the number of the discipline in the list of components of the educational component, INT is integral competence, GCj is general competence, PCj is professional (special) competence, j is the competence number in the list of competencies of the educational component.

5. Matrix of provision of program learning results relevant components of the educational component

	MD1.1	MD1.2	MD1.3	MD1.4	MD1.5	MD1.6	MD1.7	MD1.8	SD1.9	SD1.10	SD2.1	SD2.2	SD2.3	SD2.4	SD2.5	SD2.6	SD2.7	SD2.8	SD2.9	SD2.10
KN1											+							+		
KN2																		+		
KN3																				
KN4																			+	
KN5	+																			
KN6		+		+																
KN7																				
KN8																				
PR1																				
PR2																				
PR3																				
PR4																				
PR5																				
PR6																				
PR7																				
PR8																				
COM1																				
COM2																				
AaR1																				
AaR2																				
AaR3																				

Description: MDn – mandatory discipline, SDn – selective discipline, n – number of the discipline in the list of components of the educational component, KNm – program results (knowledge), PRm – program results (skills), m – number of the program result in the list of program results of the educational component.

II. The scientific component of the educational and scientific program

The scientific component of the educational-scientific program involves the postgraduate student conducting his own scientific research under the guidance of one or two academic supervisors and the preparation of his results in the form of a dissertation.

The dissertation for obtaining the Doctor of Philosophy degree is an independent detailed study that offers a solution to an actual scientific and applied task in the specialty 274 Motor Vehicle transport, the results of which are characterized by scientific novelty and practical value and are published in relevant publications.

The scientific component of the educational-scientific program is drawn up in the form of an individual plan of scientific work of a postgraduate student.

Preparation and publication of scientific articles, speeches at scientific conferences, scientific professional seminars, round tables, symposia are an integral part of the scientific component of the postgraduate educational and scientific program.

Subjects of scientific research in specialty J8 Motor Vehicle Transport

1. Development of new and improvement of existing science-based strategies, regimes and programs for maintenance and repair of means of transport.
2. Justification of operational requirements for transport equipment, determination of the parameters of the necessary repair and operation infrastructure.
3. Creation of scientific foundations and methods of parameter calculation and resource management, reliability and technical condition of transport equipment.
4. Development of methods of increasing the efficiency of the operation of vehicles and their functional systems, equipment and means of ensuring their efficiency.
5. Research methods and technological processes of maintenance and repair of transport equipment.
6. Development of technical means of mechanization and automation of maintenance and repair processes, improvement of organization, methods, means and technologies of repair works.
7. Research and development of complex methods of guaranteeing safety in transport: traffic safety, safety of use of vehicles, environmental safety.
8. Development of resource-saving, environmentally friendly operating technologies, methodological principles and engineering methods for identifying the causes of transport accidents and their prerequisites.
9. Study of the efficiency of the functioning of energetic vehicle control systems, development and implementation of engineering measures, means and methods of improving the quality of operation, maintenance and repair of transport equipment.
10. Research and development of methods of increasing the efficiency of control of

the technical condition of transport equipment, establishing regularities of changes in condition parameters during operation.

11. Development and implementation of methods, tools for diagnosing and forecasting the technical condition of means of transport, which ensure high efficiency of their use and reliability of work.

12. Research and development of methods of improving the tactical and technical and operational characteristics of vehicles, substantiation of operational requirements for their maintainability and repair technology.

13. Research and development of a set of technical measures for the development and effective use of transport facilities, substantiation of requirements for transport facilities and their equipment.

14. Improvement of means, technology, conditions of transportation of goods, passengers and luggage, methods of operational management of overloading processes at nodes of the transport network.

15. Study of the influence of operational factors on the performance of vehicles, their optimization.

16. Development of methods for increasing fuel efficiency, improving the environmental performance of vehicles in operating conditions.

17. Development of rational systems and substantiation of means of complex mechanization and automation of loading and unloading operations on transport.

18. Protection of the environment from the harmful effects of means of transport at all stages of the life cycle. Development of methods of disposal and recycling of means of transport.

19. Creation of scientific foundations of technical operation and service of vehicles running on alternative sources of energy.

20. Development of algorithms and methods of mathematical and computer modeling of intelligent car systems.

21. Calculation of working processes and indicators of operational efficiency of hybrid and electric cars, features of their diagnosis, maintenance and repair.

22. Development of standards and data transfer protocols between electronic control units, types of diagnostics of electronic control systems of units and car systems.

III. Attestation of graduate students

Attestation of higher education applicants with the degree of doctor of philosophy is carried out by a specialized scientific council, formed for a one-time defense, on the basis of a public defense of scientific achievements in the form of a dissertation.

A mandatory condition for admission to the defense is the successful completion of the graduate student's individual study plan.

The minimum volume of the main text of the dissertation is 4.0 author's pages.

Candidates of higher education with the degree of Doctor of Philosophy are obliged

to comply with the norms of the "Regulations on academic integrity at the Lviv Polytechnic National University" while studying and conducting scientific research. The dissertation cannot contain academic plagiarism, falsification, or plagiarism.

The dissertation must be in the repository of the Lviv Polytechnic National University.

Dissertations that contain information with limited access should be published in accordance with the requirements of current legislation

