MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

NATIONAL TECHNICAL UNIVERSITY
"KHARKIV POLYTECHNIC INSTITUTE"

APPROVE
Rector of NTU "KhPI"
_____ Yevgen Sokol
"02" 06 2023

EDUCATIONAL - PROFESSIONAL PROGRAM

"APPLIED MECHANICS"

Second level of higher education

in specialty 131 Applied mechanics

fields of knowledge 13Mechanical engineering

Qualification: Master's degree in applied mechanics

APPROVED
ACADEMIC COUNCIL OF NTU "KhPI"
Chairman of the academic council

_____ Leonid TOVAZHNYANSKYI
Protocol No. 4 from
"_05_" _____05_____2023

Kharkiv 2023

LETTER OF APPROVAL
of educational and professional program

Level of higher education	Second (master's)
Branch of knowledge	13Mechanical engineering
Specialty	131 "Applied Mechanics"
Qualification	Master's degree in applied mechanics

RECOMMENDED
Methodical Council of NTU "KhPI"
Deputy Chairman of the Methodical Council
_____ Ruslan MYGUSHCHENKO
"_2_" _____05_____2023

AGREED
Director of the Educational and Scientific Institute of Mechanical Engineering and Transport
_____ Vitalii IEPIFANOV
"_2_" _____05_____2023

Guarantor of the educational and professional program - Applied Mechanics
_____ Olexander SHELKOVIY
"_02_" _____05_____2023

AGREED

Head of the Department "Mechanical Engineering Technology and Metal Cutting Machines"
_____ Olexander PERMYAKOV
"_2_" _____05_____2023

Head of the Department "Computer Modeling and Integrated Pressure Processing Technologies"
_____ Vitaly CHUHLIB
"_2_" _____05_____2023

Head of the Department "Hydraulic Machines"
_____ Andrii ROGOVY
"_02_" _____05_____2023

Head of the department "Theory and systems of automated design of mechanisms and machines"
_____ Mykola TKACHUK
"_02_" _____05_____2023

Student (member of the EP project group)
_____ Yaroslav CHOBITKO
"_27_" _____04_____2023

Head of the department "Lifting - transport machines and equipment"
_____ Valentyn KOVALENKO
"_26_" _____04_____2023

Head of the department "Machine parts and hydropneumatic systems"
_____ Anatoly HAYDAMAKA
"_2_" _____05_____2023

Head of the department "Foundry production"
_____ Oleg AKIMOV
"_27_" _____04_____2023

Head of the "Welding" department
_____ Serhii LUZAN
"_2_" _____05_____2023

PREFACE

The educational and professional program "Applied Mechanics" was developed in accordance with the requirements of the standard of higher education of Ukraine for the training of students of higher education at the second (master's) level in specialty 131 "Applied Mechanics". The standard was approved and put into effect by the order of the Ministry of Education and Science of Ukraine dated June 30, 2021 No. 742.

The educational program was developed by the project group of the educational and scientific institute of mechanical engineering and transport of the National Technical University "Kharkiv Polytechnic Institute" consisting of:

The head of the working group (guarantor of the educational and professional program) is Oleksandr Mykolayovych SHELKOVY, professor, doctor of technical sciences, head of the department "Integrated engineering technologies" named after M.F. Semka

Members of the working group:

HAYDAMAKA Anatoliy Volodymyrovych, professor, doctor of technical sciences, head of the department "Machine parts and mechatronic systems"

DOLYA Viktor Mykolayovych, Ph.D., associate professor, associate professor of the department "Integrated technologies of mechanical engineering named after M.F. Semka"

CHUHLIB Vitaly Leonidovych, professor, doctor of technical sciences, head of the department "Computer modeling and integrated pressure processing technologies"

CHOBITKO Yaroslav Anatoliyovych, student of the MIT-M222d group

Reviewers:

1. Doctor of Technical Sciences, specialty 05.02.08 mechanical engineering technology, Professor Oleksandr Kupriyanov,vice-rector for scientific work of the Ukrainian Engineering and Pedagogical Academy.
2. The chief engineer is the head of the Technological Department of JSC"MINER'S LIGHT" BY Roman BEREZHNY
3. V. A. Fadeev, Deputy Chairman of the Science Board of FED JSC, Doctor of Technical Sciences, Professor, Laureate of the State Prize of Ukraine.
4. Associate Professor of the Mechanical Engineering Department of Kremenchug National University Dmytro SAVELOV
5. Hanna BAYUTA, Executive Director of Staff-eye GmbH

1. PROFILE OF THE EDUCATIONAL AND PROFESSIONAL PROGRAM IN SPECIALTY 131 "APPLIED MECHANICS"

1 - General information	
Full name of the institution of higher education and structural unit	National Technical University "Kharkiv Polytechnic Institute" Educational and Scientific Institute of Mechanical Engineering and Transport
Degree of higher education and the title of the qualification in the original language	The degree of higher education is Master's degree Specialty – 131 Applied Mechanics Master's degree in applied mechanics
The official name of the educational program	Educational and professional program "Applied mechanics"
Type of diploma and scope of the educational program	Master's degree, single, 90 ECTS credits, 1 year 4 months
Availability of accreditation	ND Accreditation Certificate No. 2192139 valid until July 1, 2024.
Program cycle/level	FQ-EHEA – the second cycle, QF LLL – 7th level, NRK – 7th level
Prerequisites	Having a bachelor's degree
Language(s) of instruction	Ukrainian / English
The term of validity of the educational program	According to the validity period of the accreditation certificate. Updated annually
Internet address of permanent accommodation description of the educational program	https://blogs.kpi.kharkov.ua/v2/quality/op-magistr-2023/ http://blogs.kpi.kharkov.ua/v2/nv/
2 - The purpose of the educational program	
Provide training of specialists in the field of applied mechanics who are able to formulate, generalize and solve practical problems in their professional activities in the design, production and operation of technical systems, machines and equipment, robotic and technical means and complexes, development of technologies of machine-building industries. The specialty is aimed at training specialists who are able to use modern physical and mathematical methods of calculating statics, dynamics and stability of elements and structures; analytical and numerical methods of modeling and simulation of machine kinematics and dynamics, analysis of the stress-strain state of structural elements; methods of design, control, research, development of technologies for manufacturing and assembling elements of machines and structures; information technologies in engineering research, design and production; methods and means of numerical software control of technological equipment; technologies of automated machine-building industries.	
3 – Characteristics of the educational program	

Subject area (field of knowledge, specialty, specialization)	Field of knowledge: Mechanical engineering Specialty: Applied mechanics
Orientation of the educational program	An educational and professional program with an applied orientation to the training of specialists who must know and apply the laws of mechanics and their applied applications, the theoretical principles of design, analysis and optimization of constructions and technologies of machine production, the basics of organizing and conducting scientific research on the mechanical properties of materials, the dynamics of machines and processes, mechanics of liquids and gases, parts of machines and structures, modeling and forecasting of operational properties of technical systems. Professional orientation – the ability to analyze materials, structures and processes based on the fundamental principles and knowledge of applied mechanics, fluid and gas mechanics, as well as on the basis of appropriate mathematical and experimental methods.
The main focus of the educational program and specialization	Special education in the field of mechanics and mechanical engineering in the specialty "Applied Mechanics" with specialization in the subject area of the relevant block of disciplines. Keywords: machines, mechanisms, technological equipment, work processes of machine-building industries, design, construction, operation, management.
Features of the program	Project-oriented professional program according to the standards of the international CDIO initiative. Project-based learning based on the sequence of implementation of integrated educational and real projects. Individualization of learning with a focus on the student. Teaching a number of academic subjects in English.

4 – Eligibility of graduates to employment and further education	
Suitability for employment	Specialists in mechanical engineering at enterprises, in design and construction, scientific and educational organizations in the positions of design engineer, technological engineer, mechanical engineer, researcher, teacher, head of division and others, as well as in other institutions in engineering and management positions structural subdivisions.
Further education	The possibility of continuing education at the next third (educational and scientific) level of higher education according to the relevant educational programs. The possibility of post-graduate education to obtain a professional qualification according to the relevant professional standards.
5 – Teaching and assessment	
Teaching and learning	Teaching is conducted in the form of lectures, laboratory and practical classes, scientific and practical seminars, implementation of educational and real projects (learning by projects). Education is carried out through the use of problem-oriented learning, distance and mixed learning, independent work and self-study, practice, preparation of qualification work in compliance with the principles of student-centeredness.
Assessment	Current and final control of knowledge (surveys, control and individual tasks, testing, etc.), tests and exams (oral and written), defense of educational and real projects with presentation, public defense of qualification work.
6– Software competencies	
Integral competence	The ability to solve complex tasks and problems in applied mechanics or in the learning process, which involves conducting research and/or implementing innovations and is characterized by the

	uncertainty of conditions and requirements
General competences (GC)	GC1. Ability to identify, pose and solve engineering and technical and scientific and applied problems. GC2. Ability to make informed decisions. GC3. Ability to use information and communication technologies. GC4. Ability to generate new ideas (creativity). GC5. Ability to develop and manage projects. GC6. Ability to communicate with representatives of other professional groups at different levels (with experts from other fields of knowledge/types of economic activity). GC7. Ability to communicate in a foreign language. GC8. Ability to learn and master modern knowledge.
Professional competences of the specialty (FC)	FC1. The ability to apply specialized conceptual knowledge of the latest methods and techniques of designing and researching structures, machines and/or processes in the field of mechanical engineering. FC2. The ability to critically analyze and forecast performance parameters of new and existing mechanical structures, machines, materials and engineering production processes based on knowledge and use of modern analytical and/or computerized methods and techniques. FC3. Application of appropriate methods and resources of modern engineering based on information technologies to solve a wide range of engineering problems using the latest approaches, forecasting methods with awareness of the invariance of solutions. FC4. The ability to critically analyze problems in education, professional and

	research activities at the level of the latest achievements of engineering sciences and at the boundaries of subject areas. FC5. The ability to set a problem and determine ways to solve a problem by means of applied mechanics and related subject areas, knowledge of methods of finding the optimal solution under conditions of incomplete information and conflicting requirements. FC6. Ability to apply appropriate mathematical, scientific and technical methods, information technologies and applied computer software to solve engineering and scientific problems in applied mechanics. FC7. The ability to describe, classify and model a wide range of technical objects and processes, which is based on a deep knowledge and understanding of mechanical theories and practices, as well as basic knowledge of related sciences. FC8. The ability to generate new ideas and the ability to substantiate new innovative projects and promote them on the market. FC9. The ability to work independently and effectively function as a group or structural unit leader when performing production tasks, complex projects, and scientific research. Responsibility for the development of professional knowledge and practices, assessment of the team's strategic development. FC10. The ability to clearly and unambiguously convey one's own conclusions, knowledge and explanations to specialists and non-specialists, in particular, in the process of teaching. Ability to understand the work of others, give and receive clear instructions.

7 - Learning results

Learning results (LR) **(defined by the standard of higher education of the specialty)**	LR1 Apply specialized conceptual knowledge of the latest methods and techniques of design, analysis and research of structures, machines and/or processes in the field of mechanical engineering and related fields of knowledge. LR2 Develop and put into production new types of products, in particular, perform research and design work and/or develop technological support for the process of their production. LR3 Apply automation systems for research, design and construction work, technological preparation and engineering analysis in mechanical engineering. LR4 Use modern methods of optimizing the parameters of technical systems by means of system analysis, mathematical and computer modeling, in particular under the conditions of incomplete and contradictory information. LR5 Independently set and solve problems of an innovative nature, argue and defend the obtained results and decisions. LR6 Develop, implement and evaluate innovative projects taking into account engineering, legal, environmental, economic and social aspects. LR7 It is clear and unambiguous to present the results of research and projects, to convey one's own conclusions, arguments and explanations in national and foreign languages orally and in writing to colleagues, students and representatives of other professional groups of various levels. LR8 Master modern knowledge, technologies, tools and methods, in particular through independent study of specialized literature, participation in

	scientific, technical and educational events. LR9 Organize the work of the group when completing tasks, complex projects, scientific research, understand the work of others, give clear instructions. LR10 Search for necessary information in scientific and technical literature, electronic databases and other sources, assimilate, evaluate and analyze this information. LR11 Develop management and/or technological solutions under uncertain conditions and requirements, evaluate and compare alternatives, analyze risks, predict possible consequences.
Learning results (LR) (determined by the institution of higher education)	LR12 Demonstrate the ability to perform modeling, static and dynamic analyzes of structures, mechanisms, materials and processes at the design stage using modern computer systems. LR13 Demonstrate the ability to justify and evaluate projects, knowledge of methods of promoting them on the market, ability to perform econometric and scientific evaluations. LR14 Demonstrate knowledge of the basics of organization and personnel management. LR15 Demonstrate knowledge of the structure, functioning, technical and software support of information and measurement computerized systems in machine-building production. LR16 Demonstrate knowledge and understanding of the basics of production process organization. LR17 Demonstrate knowledge of the organization, functioning, technical and software support of information and measurement computerized systems in scientific research of mechanical systems and processes.

8 – Resource support for program implementation	
Staff support	Meets the personnel requirements for ensuring the implementation of educational activities in the field of higher education in accordance with the current legislation of Ukraine (Resolution of the Cabinet of Ministers of Ukraine "On approval of licensing conditions for the implementation of educational activities of educational institutions" dated December 30, 2015 No. 1187 with changes introduced in accordance with the Resolution of the Cabinet of Ministers No. 365 dated 24.03.2021)
Material and technical support	Meets the technological requirements for the material and technical support of educational activities in the field of higher education in accordance with the current legislation of Ukraine (Decree of the Cabinet of Ministers of Ukraine "On approval of licensing conditions for conducting educational activities of educational institutions" dated December 30, 2015 No. 1187 as amended in accordance with the Decree KM No. 365 dated 03/24/2021)
Informational and educational and methodological support	Meets the requirements for educational, methodological and informational support of educational activities in the field of higher education in accordance with the current legislation of Ukraine (Decree of the Cabinet of Ministers of Ukraine "On approval of licensing conditions for educational activities of educational institutions" dated December 30, 2015, No. 1187 (as amended according to Resolution of the Cabinet of Ministers No. 365 dated 03/24/2021). The educational process is provided with textbooks, study aids, reference literature,

	methodical publications of teachers. Having access to the Internet allows you to use the databases of periodical scientific publications of the relevant profile. Information support is also based on the library base of KhPI National Technical University
9 – Academic mobility	
National credit mobility	On the basis of bilateral agreements between the National Technical University "Kharkiv Polytechnic Institute" and leading technical universities of Ukraine.
International credit mobility	On the basis of bilateralcontractsbetween the National Technical University "Kharkiv Polytechnic Institute" and educational institutions of higher education of foreign partner countries.
Education of foreign students of higher education	Foreign citizens study at the University according to national programs and contracts concluded with legal entities and individuals, regardless of gender, race, nationality, social and property status, type and nature of occupations, worldview beliefs, party affiliation, attitude to religion, place of residence and other circumstances

2. LIST OF COMPONENTS OF THE EDUCATIONAL AND PROFESSIONAL PROGRAM AND THEIR LOGICAL SEQUENCE

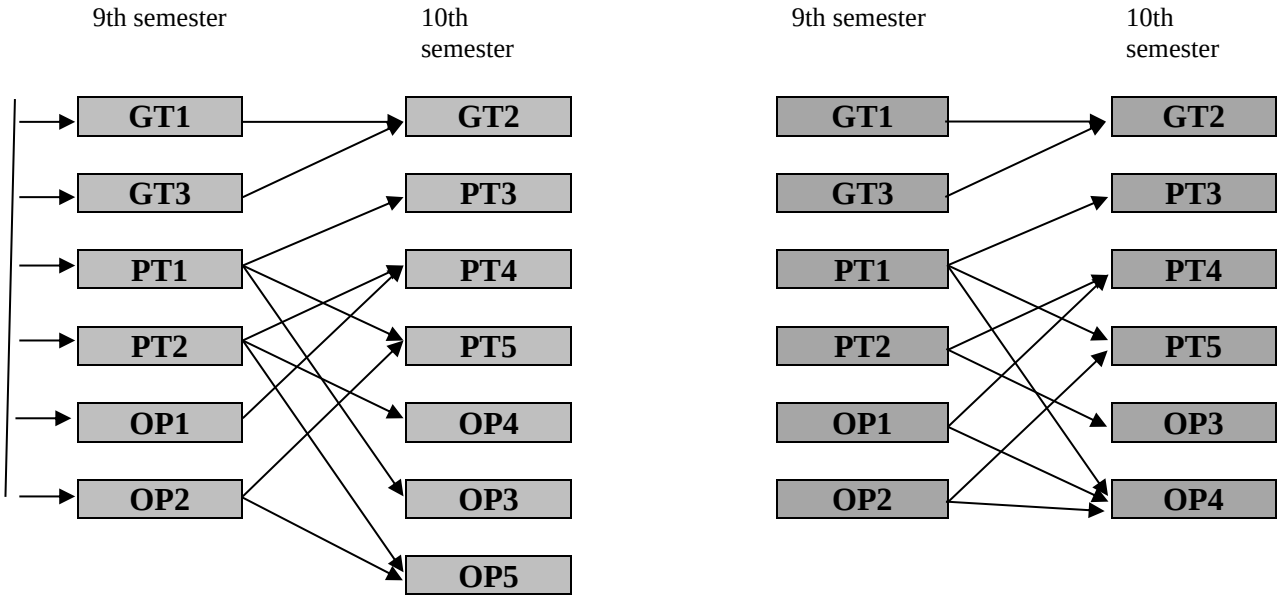
2.1 List of OP components

Code	Components of the educational program (disciplines, projects / works, practice, qualification work)	Number loans ECTS	Final control form
1	**2**	**3**	**4**
1. OBLIGATORY EDUCATIONAL COMPONENTS			
1.1 General training			
GT1	Intellectual Property	3.0	Test
GT2	Innovative Entrepreneurship and Management of Startup Projects	3.0	Test
GT3	Foreign Language for Professional Purposes	3.0	Test
1.2 Professional) training			
PT 1	Modern technologies in applied mechanics	4.0	Exam
PT 2	Work processes of modern productions	4.0	Exam
PT 3	Modeling and design of processes, products, equipment	4.0	Exam
PT 4	Certification and metrological quality assurance	4.0	Exam
PT 5	Basics of the scientific research	3.0	Exam
2. **PRACTICAL TRAINING**			
PP1	Pre-graduation practice	15.0	Test
3. **ATTESTATION**			
	Attestation	15.0	Public protection qualification work
THE TOTAL AMOUNT OF MANDATORY COMPONENTS		**58**	
4. OPTIONAL EDUCATIONAL COMPONENT			
4.1	**Profile training**		
4.1.1	**Profiled discipline package 01"Integrated engineering technologies"**	**24**	
OP 1.1	High technologies in mechanical engineering	6.0	Exam
OP 1.2	System analysis, structural and parametric optimization	6.0	Test
OP 1.3	Additive technologies of materialization of industrial products	6.0	Exam
OP 1.4	Laser and combined technologies	6.0	Test
4.1.2	**Profiled discipline package 02"Tool production"**	**24**	
OP 2.1	Theory of 3D modeling	6.0	Exam
OP 2.2	Theory of designing tools and CAD systems	6.0	Test
OP 2.3	Special technologies of tool production	6.0	Exam
OP 2.4	Design of tool shops and divisions	6.0	Test
4.1.3	**Profiled discipline package 03 "Technology of automated production"**	**24**	
OP 3.1	CALS technologies in mechanical engineering	6.0	Exam
OP 3.2	Machine tools	6.0	Test

OP 3.3	Automated programming systems for CNC machines	5.0	Test
OP 3.4	Precision equipment of automated production	4.0	Exam
OP 3.5	Automation of assembly production	3.0	Test
4.1.4	**Profiled discipline package 04 "Metal cutting machines and systems"**	**24**	
OP 4.1	Dynamics and computer modeling of metal cutting equipment	6.0	Exam
OP 4.2	Diagnostics and operation of technological equipment	6.0	Test
OP 4.3	Automated programming systems for CNC machines	5.0	Test
OP 4.4	Reliability and environmental friendliness of machine tool systems	4.0	Exam
OP 4.5	Mechatronics and components of technological equipment	3.0	Test
4.1.5	**Profiled discipline package 05 "Engineering of logistics systems"**	**24**	
OP 5.1	Monitoring and diagnostics of cargo handling equipment	6.0	Exam
OP 5.2	Technical and technological equipment of logistics systems	6.0	Test
OP 5.3	Visualization and 3D modeling in automated transport and storage complexes	5.0	Test
OP 5.4	Modeling and optimization of systems	4.0	Exam
OP 5.5	Administration of logistics systems	3.0	Test
4.1.6	**Profiled discipline package 06 "Smart hydro-pneumatic systems"**	**24**	
OP 6.1	Methods of controlling power circuits of hydropneumatic systems	6.0	Test
OP 6.2	Fluid and gas mechanics	6.0	Exam
OP 6.3	Design of hydraulic and pneumatic power circuits of hydropneumatic systems	6.0	Exam
OP 6.4	The application of engineering software complexes to the modeling of physical processes in hydropneumatic systems	6.0	Test
4.1.7	**Profiled discipline package 07 "Standardization, certification and product quality management"**	**24**	
OP 7.1	Quality management systems	6.0	Exam
OP 7.2	Standardization of products and services	6.0	Test
OP 7.3	Audit of quality systems	6.0	Exam
OP 7.4	Qualimetry, quality management and product competitiveness	6.0	Test
4.1.8	**Profiled discipline package 08 "Computer modeling and integrated technologies of pressure processing"**	**24**	
OP 8.1	Methods of computational mathematics in pressure processing	6.0	Exam
OP 8.2	Theory of processes in pressure treatment	6.0	Test
OP 8.3	Modern methods of scientific research in pressure treatment	5.0	Test
OP 8.4	Additive technologies and production	4.0	Exam
OP 8.5	Designing workshops and districts	3.0	Test
4.1.9	**Profiled discipline package 09 "Computerized foundry production, artistic and jewelry casting"**	**24**	

OP 9.1	Resource-saving technologies and melting of alloys with special properties	6.0	Exam
OP 9.2	Automation of foundry production	6.0	Test
OP 9.3	Technology of artistic and jewelry casting	5.0	Test
OP 9.4	Additive technologies in foundry production	4.0	Exam
OP 9.5	Alloys for artistic and jewelry molding	3.0	Test
4.1.10	**Profiled discipline package 10 "Digital hydraulics, hydraulic machines and hydropneumatic drives"**	**24**	
OP 10.1	Dynamics of hydropneumatic systems	6.0	Exam
OP 10.2	CAD of hydropneumatic drives	6.0	Test
OP 10.3	Proportional hydraulics	4.0	Test
OP 10.4	Design and calculation of volumetric hydraulic machines and hydropneumatic systems	5.0	Exam
OP 10.5	Operation of hydropneumatic drives of technological equipment	3.0	Test
4.1.11	**Profiled discipline package 11 "Welding and related processes and technologies"**	**24**	
OP 11.1	Experimental methods in welding	6.0	Exam
OP 11.2	Ability to weld structural materials	6.0	Test
OP 11.3	Modernization of welding shops	5.0	Test
OP 11.4	Welding of special steels and non-ferrous alloys	4.0	Exam
OP 11.5	Surface engineering	3.0	Test
4.1.12	**Profiled discipline package 12 "Computer modeling of technical systems"**	**24**	
OP 12.1	Modern methods of mathematical and computer modeling	6.0	Exam
OP 12.2	Computerized design of complex mechanical objects and systems	6.0	Test
OP 12.3	Computer systems for the justification of project decisions	5.0	Test
OP 12.4	Research of connected physical and mechanical processes in modern CAD	4.0	Exam
OP 12.5	Mathematical modeling in modern CAD	3.0	Test
4.2	**Optional student disciplines of the profile preparation according to the list**	**8**	
THE TOTAL AMOUNT OPTIONAL EDUCATIONAL COMPONENT		**32**	
TOTAL FOR EDUCATION PERIOD		**90**	

2.1. Structural and logical scheme of OP



2.2. Distribution of the content of the educational program by component groups and preparation cycles

No n/p	Training cycle	The volume of the educational load of the student of higher education (credits / %)		
		Mandatory components of the educational and professional program	Elective components of the educational and professional program	Total for the entire period of study
1	General training	**9 / 10**		**9 / 10**
2	Special (professional) training	**49 / 54**		**49 / 54**
3	Disciplines of free choice -		**32 / 36**	**32 / 36**
Total for the entire period of study		**58 / 64**	**32 / 36**	**90/100**

3. FORM OF CERTIFICATION OF HIGHER EDUCATION ACQUIRES

Attestation forms students of higher education	Attestation is carried out in the form of public defense of qualification workand ends with the issuance of a document of the established model on awarding a master's degree with the qualification: "Master of Applied Mechanics".
Requirements for qualifying work	Qualification work involves solving a complex task or problem through research and/or innovation. The qualification work must be published on the official website of the institution of higher education, or its structural subdivision, or in the repository of the institution of higher education.

4. REQUIREMENTS FOR THE PRESENCE OF AN INTERNAL QUALITY ASSURANCE SYSTEM OF HIGHER EDUCATION

Principles and procedures ensuring the quality of education	**Principles of education quality assurance:** • responsibility for the quality of higher education provided; • quality assurance corresponds to the diversity of higher education systems, higher education institutions, programs and students; • quality assurance takes into account the needs and expectations of students, stakeholders and society. **The procedures for ensuring the quality of education are:** • development of strategy and policy in the field of quality of higher education; • development of a mechanism for formation, approval, monitoring and periodic review of educational programs; • development of a system for evaluating the knowledge of students of higher education, scientific and pedagogical workers. • organization of professional development of pedagogical, scientific and scientific-pedagogical workers; • formation of the necessary resources for the organization of the educational process, including independent work of students, according to the educational program; • creation and operation of information systems for effective management of the educational process; publication of objective, unbiased information about educational programs, degrees of higher education and qualifications; • development of a policy regarding an effective system of prevention and detection of academic plagiarism in scientific works of higher education applicants.
Monitoring is periodic viewing educational programs	Monitoring and periodic review of programs is carried out in order to ensure their compliance with the needs of students and society. Monitoring is aimed at continuous improvement of programs. Regular monitoring, revision and updating of educational programs aims to guarantee the appropriate level of provision of educational services, and also creates a favorable and effective learning environment for students of higher education.
Annual assessment university graduates education	Assessment of higher education applicants is based on the principles of student-centered learning, is consistent, transparent and is conducted in accordance with established procedures.

Improving the qualifications of scientific and pedagogical workers	The system of improving the qualifications of scientific-pedagogical, pedagogical and scientific workers is developed in accordance with the current regulatory framework.
Availability of necessary resources for the organization of educational process	The needs of a diverse student body and the principles of student-centered learning are taken into account when planning, distributing and providing educational resources and providing support to those seeking higher education. Internal educational quality assurance ensures that all necessary resources meet learning objectives, are publicly available, and students are informed of their availability.
Availability of information systems for effective management educational process	In order to manage educational processes, an effective policy in the field of information management and a corresponding integrated information system for managing the educational process have been developed. This system provides automation of the main functions of managing the educational process, in particular: ensuring the introduction campaign, planning and organization of the educational process; access to educational resources; registration and analysis of the success of higher education applicants; administration of the main and auxiliary processes of providing educational activities; monitoring of compliance with quality standards; knowledge management and innovation management; personnel management, etc.
Publicity of information about educational programs, degrees of higher education and qualifications	Reliable, objective, up-to-date, timely and easily accessible information about the activities of the educational and professional program " Applied mechanics " is published on the website of NTU "KhPI", including programs for potential applicants of higher education, students, graduates, other stakeholders and the public . Information is provided on educational activities, including programs, selection criteria for training; planned learning outcomes under these programs; qualifications; the learning, teaching and assessment procedures used; passing scores and educational opportunities available to students, etc.
Ensuring academic compliance integrity	In the event of a violation of the principles of academic integrity, the relevant persons will be prosecuted in accordance with the legislation and the regulations and norms in force at KhPI National Technical University.

Matrix of correspondence of competences to NRK descriptors

Classification of competences according to the NRK	Knowledge **Zn1**Specialized conceptual knowledge that includes current scientific achievements in the field of professional activity or field of knowledge and is the basis for original thinking and conducting research, critical understanding of problems in the field and at the boundaries of fields of knowledge	Skills/Abilities **Mind1**Specialized skills/problem-solving skills needed to conduct research and/or implement innovative activities to develop new knowledge and procedures **Mind2**Ability to integrate knowledge and solve complex problems in broad or multidisciplinary contexts **Mind3**Ability to solve problems in new or unfamiliar environments in the presence of incomplete or limited information, taking into account aspects of social and ethical responsibility	Communication **K1**Clear and unambiguous presentation of one's own knowledge, conclusions and arguments to specialists and non-specialists, in particular to people who are studying	Responsibilityand autonomy **AB1**Managing work or learning processes that are complex, unpredictable and require new strategic approaches **AB2**Responsibility for contributing to professional knowledge and practice and/or evaluating the performance of teams and teams **AB3**Ability to continue learning with a high degree of autonomy
General competences				
GC1		**Mind3**		**AB1**
GC2		**Mind2**	**K1**	**AB1**
GC3	**Zn1**	**Mind2**	**K1**	**AB2, AB3**
GC4	**Zn1**	**Mind1**		
GC5	**Zn1**	**Mind3**	**K1**	**AB1**
GC6	**Zn1**		**K1**	
GC7	**Zn1**		**K1**	**AB3**
GC8		**Mind1**		**AB3**
Special (professional, subject) competences				
FC1	**Zn1**	**Mind1**		
FC2	**Zn1**	**Mind1**		**AB1**
FC3	**Zn1**	**Mind1, Mind2**	**K2**	**AB1**
FC4	**Zn2**			
FC5	**Zn2**	**Mind1**	**K1**	**AB1**
FC6	**Zn1**	**Mind1, Mind2**		
FC7	**Zn1**	**Mind2**		
FC8		**Mind2**	**K1**	
FC9		**Mind1**		**AB3**
FC10			**K1**	**AB2**

Matching matrix of learning outcomes and competencies

	Competences																	
	General								**Special (professional)**									
	GK1	**GK2**	**GK3**	**GK4**	**GK5**	**GK6**	**GK7**	**GK8**	**FC1**	**FC2**	**FC3**	**FC4**	**FC5**	**FC6**	**FC7**	**FC8**	**FC9**	**FC10**
LR1		GT2 PT1		GT1 PT4	GT1 GT2			PT5	PT1		GT1 PT5		GT2 PT1 PT4 PT5		GT1 GT2 PT1 PT4 PT5			GT1 GT2 PT5
LR2	GT1 PT2		GT1						PT2		GT1				GT1 PT4			
LR3	PT2 GT3	GT2 GT3 PT1 PT2						PT1 PT2 PT5 PP1	GT3 PT1 PT2	PT2 PP1	PT3 PT5		GT2 PT1 PT5	GT2 PT1 PT3	GT2 PT1 PT3 PT5		PT2	
LR4	GT1 GT3	GT2 GT3 PT1	GT1 PT3 PP1	GT1 PT4	GT1 GT2	GT3 PT4		PT1 PT5 PP1	GT3 PT1		GT1 PT3 PT5		GT2 PT1 PT4 PT5	GT2 PT1 PT3			GT1 PT4	GT1 GT2 PT5 PP1
LR5		GT3 PT1		PT3 PT4		GT3 PT4		PT1				GT3 PT4			PT1 PT3 PT4	GT3 PT1 PT4		
LR6	GT3		GT2 PT3			GT3 PT4	PT3 GT2		GT3			GT2 GT3 PT4	GT2 PT4 PT5			GT3 PT4		

	Competences																	
	General								Special (professional)									
	GK1	**GK2**	**GK3**	**GK4**	**GK5**	**GK6**	**GK7**	**GK8**	**FC1**	**FC2**	**FC3**	**FC4**	**FC5**	**FC6**	**FC7**	**FC8**	**FC9**	**FC10**
LR7							GT2 PT1	PT1 PT2		PT2	GT1	GT2			GT1 GT2 PT1	PT1	GT1 PT2	GT1 GT2 PT2
LR8			GT2 PT3			GT3	GT2 PT3		GT3			GT2 GT3		GT2 PT3				
LR9			GT2 PT3 PP1							PT2 PP1			GT2				PT2	
LR10		GT3 PT2 PT1	GT1 PP1				PT1 PP1			PT2 PP1			PT1	PT1		GT3 PT1		GT1 PT2 PP1
LR11				GT1 PT4								GT2 PT4	GT2 PT4 PT5					GT1 GT2 PT5
LR12		GT2 PT1	GT2 PP1		GT2		PT1 GT2 PP1	PT1 PP1	PT1			GT2	GT2 PT1	GT2 PT1	GT2 PT1	PT1		GT2 PP1

	Competences																	
	General								Special (professional)									
	GK1	**GK2**	**GK3**	**GK4**	**GK5**	**GK6**	**GK7**	**GK8**	**FC1**	**FC2**	**FC3**	**FC4**	**FC5**	**FC6**	**FC7**	**FC8**	**FC9**	**FC10**
LR13	GT3 PT2	GT3 PT2			PT2	GT3		PT2	GT3 PT2	PT2		GT3				GT3	PT2	PT2
LR14	PT2	GT2 PT2	GT2 PT3	PT3 PT4	GT2 PT2	PT4	GT2 PT3	PT2	PT2	PT2	PT3	GT2 PT4	GT2 PT4	GT2 PT3	GT2 PT3 PT4	PT4	PT2 PT4	GT2 PT2
LR15		PT1	PT3	PT3			PT1 PT3		PT1		PT3		PT1	PT1 PT3	PT1 PT3	PT1		
LR16	GT1 PT2	PT2	GT1	GT1	GT1 PT2			PT2	PT2	PT2	GT1				GT1		GT1 PT2	GT1 PT2
LR17			PT3 PP1	PT3			PT3 PP1	PT5 PP1			PT3 PT5		PT5	PT3	PT3 PT5			PT5 PP1