NCJSC "Kazakh Agrotechnical Research University by S. Seifullin"

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NCJSC "Kazakh Agrotechnical Research University by S. Seifullin"
Dean of the Technical Faculty
__________ Akhmetov E.S.
«__» ______ 2024y.

CATALOG OF ELECTIVE DISCIPLINES

For students in the direction of preparation 6B071 Engineering and engineering trades
EPG: B064 - «Mechanics and metal working»
EP: 6B07104 - «Technological Machinery and Equipment»
Form of education: Full-time (bachelor 4 years) semester
Component: Elective subjects
Level of training: Bachelor

Brief description of the elective disciplines of the educational program

The name of discipline	Code of subject	Discipline cycle	Number of credits	Cafedra	Course	Academic period	Pre-requisitions	Post-requisitions	Brief content of the discipline	Key learning outcomes	Name of the alternative discipline
Fundamentals of technology processing industries	OTPP 1233	BS	4.0	Technological machines and equipment	1	1	School course: Physics	Failure analysis and repair of machines, Machines and Apparatus for Processing Livestock Products, Machines and equipment for processing of crop products	The organization of the process flow as a system of processes. The structure of the process flow. Raw materials for food production. Formation of the nutritional value of the grain during cultivation. Change in grain quality during storage. Storage of raw materials and its preparation for production. The main processes of food technology, their role and impact on food quality.	Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Analyze in logical and quantitative account of conditions of production development, unscheduled repairs and evaluate the competitiveness of created products on the principles of engineering, formulate inventions, learn the basics of entrepreneurship, financial literacy and anti-corruption culture and demonstrate leadership skills. Develop and describe projects of mechanical engineering enterprises, develop technological process of parts manufacturing, analyze normative-technical documentation and measuring systems.	Basics of organization of wheeled and casterpillar machines
Basics of organization of wheeled and casterpillar machines	OUKGM 1259	BS	4.0	Agrarian Technique and Technology	1	1	School course: Physics	Agreecultural machines, Failure analysis and repair of machines, Mechanization of cattle-breeding farm	General information about the design, arrangement and operation of units and systems of basic models, basic adjustments, techniques for maintaining technical condition, expanding practical skills and abilities in the field of technical operation of domestic and foreign tractors and agricultural vehicles widely used in farms.	Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Organize the control of parameters of electrical equipment, metalworking machines and numerical control systems, analyze and refine technical specifications for the robot (CNC machines), develop measures to prevent and eliminate violations of process norms. Develop and describe projects of mechanical engineering enterprises, develop technological process of parts manufacturing, analyze normative-technical documentation and measuring systems.	Fundamentals of technology processing industries

Artificial intelligence basics	OII 2254	BS	3.0	Higher Mathematics	2	1	Information and communication technologies	Multimedia technologies (Minor), Digital competencies in professional activities (Minor), Production processes (CAM, DTSP)	Introduction to Artificial Intelligence (AI). Application of AI in various fields. The basics of AI. Search algorithms and problem solving methods. Knowledge representation. Machine learning. Neural networks and deep learning. Natural language processing. Computer vision and image processing. Robotics and intelligent agents. Ethical and social implications and I. Cognitive architectures and models of human thinking.	Apply modern methods of chemistry, physics, mathematics, the basics of artificial intelligence technology and modern information and communication technologies to solve problems arising in the study of fundamentals and major disciplines.	Basics of financial literacy
Basics of financial literacy	OFG 2260	BS	3.0	Accounting and Finance	2	1	School courses: Fundamentals of Law; Fundamentals of Entrepreneurship and Business	Production management	The concept, goals and objectives of financial literacy. Money, settlements and payments. Personal finances: income, expenses, budget. Taxes and taxation of individuals. Banking services for the population. Insurance. Financial markets and basics of investing. Individual entrepreneurship and startup. Personal financial security.	Analyze in logical and quantitative account of conditions of production development, unscheduled repairs and evaluate the competitiveness of created products on the principles of engineering, formulate inventions, learn the basics of entrepreneurship, financial literacy and anti-corruption culture and demonstrate leadership skills.	Artificial intelligence basics
Physical and colloid chemistry	FKH 2257	BS	4.0	Physics and Chemistry	2	2	School course: Chemistry	Technology of construction materials, Metal-working machines and welding equipment	Molecular-kinetic theory of aggregative states of matter. Fundamentals of Chemical Thermodynamics (TD). Chemical kinetics. Catalysis. Chemical equilibrium. Phase balance. Solutions. Electrochemistry. Colloidal chemistry - physical chemistry of dispersed systems. Solutions of high-molecular compounds (IUD).	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment. Apply modern methods of chemistry, physics, mathematics, the basics of artificial intelligence technology and modern information and communication technologies to solve problems arising in the study of fundamentals and major disciplines.	Chemistry
Chemistry	Him 2048	BS	4.0	Physics and Chemistry	2	2	School course: Chemistry	Technology of modern engineering materials, Metal-working machines and welding equipment	Formation of students' system of fundamental knowledge of the basic laws of chemistry and physico-chemical methods of analysis with their subsequent application of professional activity and use for solving engineering problems. The study of the basic laws of chemistry, chemical reactions, the peculiarities of their course, control methods, the theory of the structure of organic compounds, the classification of reagents and reactions in organic chemistry.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment. Apply modern methods of chemistry, physics, mathematics, the basics of artificial intelligence technology and modern information and communication technologies to solve problems arising in the study of fundamentals and major disciplines.	Physical and colloid chemistry

Machines and Apparatus for Processing Livestock Products	MAPPZh 3228	BS	5.0	Technological machines and equipment	3	1	Fundamentals of technology processing industries, Electrical engineering and the basics of electronics	Installation, testing and operation of technological machines	Technological equipment for the preparation and processing of agricultural products by separation methods. Technological equipment for the preparation and processing of agricultural products by the methods of connection. Technological equipment for the preparation and processing of agricultural products by molding. Technological equipment for the preparation and processing of agricultural products by the methods of heat and mass transfer. Equipment for filling large-sized and small-sized containers, packaging machines. Line mechanized processing plants.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment. Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps.	Mechanization of cattle-breeding farm
Mechanization of cattle-breeding farm	MZh 3261	BS	5.0	Agrarian Technique and Technology	3	1	Basics of organization of wheeled and casterpillar machines, Electrical engineering and the basics of electronics	Agreecultural machines, Installation, testing and operation of technological machines	Training students to knowledge, abilities and practical skills on technology and mechanization of production processes in animal husbandry. Modern progressive methods and techniques of mechanization of production processes in animal husbandry, selection of machinery and equipment for the production of livestock products, rational use of material and energy-saving technical means. Designing and completing units of production technological lines of livestock farms, complexes.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment. Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps.	Machines and Apparatus for Processing Livestock Products
Digital competencies in professional activities (Minor)	CKPDM 3330	AS	5.0	Higher Mathematics	3	1	Information and communication technologies, Artificial intelligence basics	Multimedia technologies (Minor), Production processes (CAM, DTSP)	The study of the discipline considers modern trends in the development of new digital technologies, the main ways of their application in science and education, as well as the application of basic methods, ways and means of obtaining, storing and processing information in solving professional problems.	Apply modern methods of chemistry, physics, mathematics, the basics of artificial intelligence technology and modern information and communication technologies to solve problems arising in the study of fundamentals and major disciplines.	Corrosion and protection of materials, Food equipment corrosion and protection methods
Food equipment corrosion and protection methods	KPOMZ 3333	AS	5.0	Technological machines and equipment	3	1	Materials in engineering design,	Food engineering technology, Installation, testing and operation of technological machines, Production processes (CAM, DTSP)	Study of corrosion mechanisms, corrosion resistance of metals and principles of selection of structural materials for specific operating conditions. Consideration of the causes of corrosion of metals, chemical corrosion, the theory of electrochemical corrosion, the kinetics of the process, methods of protection against corrosion. The study of the course is focused on the formation of the ability to scientifically justify the choice of corrosion-resistant structural metal materials.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment.	Corrosion and protection of materials, Digital competencies in professional activities (Minor)

Corrosion and protection of materials	KZM 3332	AS	5.0	Technological machines and equipment	3	1	Materials in engineering design	Technology of agricultural engineering, Installation, testing and operation of technological machines, Production processes (CAM, DTSP)	The discipline is aimed at studying the mechanisms of corrosion, corrosion resistance of metals and the principles of choosing structural materials for specific operating conditions. The course is presented in sections: causes of metal corrosion, chemical corrosion, theory of electrochemical corrosion, kinetics of the process, methods of corrosion protection. The study of the course is focused on the formation of the ability to scientifically substantiate the choice of corrosion-resistant structural metal materials.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment.	Food equipment corrosion and protection methods, Digital competencies in professional activities (Minor)
Technology of construction materials	TKM 1208	BS	5.0	Technological machines and equipment	3	1	Materials in engineering design	Food engineering technology, Installation, testing and operation of technological machines, Production processes (CAM, DTSP)	The discipline is aimed at obtaining knowledge about the basic technological methods of obtaining and processing blanks of machine parts, structure, properties, separation, marking and heat treatment of the main technologies of structural and tool materials.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment.	Technology of modern engineering materials
Technology of modern engineering materials	TSMM 3263	BS	5.0	Technological machines and equipment	3	1	Materials in engineering design	Technology of agricultural engineering, Installation, testing and operation of technological machines, Production processes (CAM, DTSP)	The discipline studies modern technological methods of production of ferrous and non-ferrous metals, production of blanks and machine parts from metallic and non-metallic materials: casting, pressure treatment and other innovative methods.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment.	Technology of construction materials
Fundamentals of entrepreneurial activity	OPD 3128	GER	5.0	Management and Marketing	3	2	School courses: Fundamentals of Law; Fundamentals of Entrepreneurship and Business	Production management	The discipline is focused on the formation of students' comprehensive understanding of entrepreneurship and the possibilities of organizing entrepreneurial activity. The content of the discipline characterizes the essence of entrepreneurial activity, its types and functions, subjects of entrepreneurial activity and the business environment, and also reflects the features of the mechanism for creating your own business, business planning, financial and personnel support, characterizes the types of entrepreneurial risks and ways to prevent and minimize them.	Analyze in logical and quantitative account of conditions of production development, unscheduled repairs and evaluate the competitiveness of created products on the principles of engineering, formulate inventions, learn the basics of entrepreneurship, financial literacy and anti-corruption culture and demonstrate leadership skills.	Labor protection and basics of life safety, Introduction to leadership in education, Basics of economics and law, Basics of anti-corruption culture
Introduction to leadership in education	VLO 3126	GER	5.0	Professional education	3	2	School courses: Fundamentals of Law; Fundamentals of Entrepreneurship and Business	Production management	The discipline analyzes and studies the model of effective communication of the leader, methods of management in critical situations, methods of work in the management team and the principle of distribution of roles in the team, methods of effective control and motivation of training. It provides an opportunity to study the theory of leadership qualities and at the same time the concept of leadership behavior (three leadership styles (K. Levin), research at the University of Ohio, research at the University of Michigan, management system (R. Likert), management grid (Blake and Mouton), concept of reward and punishment, substitute leadership (S. Kerr and J. Germier).	Analyze in logical and quantitative account of conditions of production development, unscheduled repairs and evaluate the competitiveness of created products on the principles of engineering, formulate inventions, learn the basics of entrepreneurship, financial literacy and anti-corruption culture and demonstrate leadership skills.	Basics of anti-corruption culture, Basics of economics and law, Fundamentals of entrepreneurial activity, Labor protection and basics of life safety

Basics of anti-corruption culture	OAK 3127	GER	5.0	Economy	3	2	School courses Fundamentals of Law, Fundamentals of Entrepreneurship and Business	Production management	The course forms a system of knowledge on combating corruption, and the development on this basis of a civil position in relation to this phenomenon. As a result of mastering the discipline, students will be able to: navigate the legislation; analyze and apply legal acts in specific situations, follow moral.	Analyze in logical and quantitative account of conditions of production development, unscheduled repairs and evaluate the competitiveness of created products on the principles of engineering, formulate inventions, learn the basics of entrepreneurship, financial literacy and anti-corruption culture and demonstrate leadership skills.	Basics of economics and law, Fundamentals of entrepreneurial activity, Introduction to leadership in education, Labor protection and basics of life safety
Labor protection and basics of life safety	OTOBZh 3118	GER	5.0	Agrarian Technique and Technology	3	2	Educational practice, Internship, School course: Fundamentals of life safety;	Internship, Pre-graduation practice, Production management	The discipline contributes to the formation of students' knowledge, practical skills to create safe and harmless living conditions, to prevent the causes and prevention of dangerous situations, to protect the population and production personnel and objects of the national economy from the possible consequences of emergency situations. Supervision and control of the implementation of legislation and responsibility for violation of labor protection requirements.	Perform electrical engineering calculations, choose the correct operation of electrical equipment, analyze hazardous and harmful factors of production, study life safety requirements.	Basics of anti-corruption culture, Basics of economics and law, Fundamentals of entrepreneurial activity, Introduction to leadership in education
Basics of economics and law	OEP 3124	GER	5.0	Economy	3	2	School courses: Fundamentals of Law; Fundamentals of Entrepreneurship and Business	Production management	The discipline promotes knowledge of the subject of economic theory and methods of research, the basis of public production and forms of public economy, the mechanism of functioning of the market system, production, costs and income of the firm, national economy. To master the basics of the theory of the state and law, the basics of constitutional, administrative, civil, labor, family, criminal law.	Analyze in logical and quantitative account of conditions of production development, unscheduled repairs and evaluate the competitiveness of created products on the principles of engineering, formulate inventions, learn the basics of entrepreneurship, financial literacy and anti-corruption culture and demonstrate leadership skills. Develop and describe projects of mechanical engineering enterprises, develop technological process of parts manufacturing, analyze normative-technical documentation and measuring systems.	Labor protection and basics of life safety, Introduction to leadership in education, Fundamentals of entrepreneurial activity, Basics of anti-corruption culture
Technology of agricultural engineering	TSM 3326	AS	5.0	Technological machines and equipment	3	2	Draft execution automation. Strength of materials, Materials in engineering design, Machine elements and design principles	Installation, testing and operation of technological machines, Production processes (CAM, DTSP), Mechanical and design assembly room	To form general professional knowledge and skills in the field of design of technological processes; their equipment for the production of agricultural machinery and apparatus and their technical operation, to acquaint future graduates with the methods of technical calculations and the development of product designs in relation to progressive technologies for single, serial and mass production.	Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps. Develop and describe projects of mechanical engineering enterprises, develop technological process of parts manufacturing, analyze normative-technical documentation and measuring systems.	Food engineering technology

Food engineering technology	TPM 3331	AS	5.0	Technological machines and equipment	3	2	Draft execution automation. Strength of materials, Materials in engineering design, Machine elements and design principles	Installation, testing and operation of technological machines, Production processes (CAM, DTSP), Calculation and design of food production machines	Study of the basics of production technology of machine parts and mechanisms of food equipment, consideration of the peculiarities of technology of manufacturing of typical parts of machines and equipment of food, meat and dairy industries and the basics of specialized technology of manufacturing of machines and devices of these industries. Study of the issues of mechanization and automation of production processes, organization of flow production and assembly of machines and devices, technical and economic analysis of technological process options. Consideration of issues of industry technology, taking into account the use of new materials and progressive methods of their processing, machine tools with program control and automatic lines, systems of standards in the field of technological preparation of production and technological documentation.	Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps. Develop and describe projects of mechanical engineering enterprises, develop technological process of parts manufacturing, analyze normative-technical documentation and measuring systems.	Technology of agricultural engineering
Machines and equipment for processing of crop products	MAPPR 3235	BS	5.0	Technological machines and equipment	3	2	Fundamentals of technology processing industries, Electrical engineering and the basics of electronics	Installation, testing and operation of technological machines	Machines, technologies, units, complexes of primary grain processing. Machines, Purpose, device, technology, equipment and complexes of primary processing of potatoes. Machines, technologies, equipment and complexes of primary processing of root crops. Machines, technologies, equipment and complexes of primary processing of fruits and vegetables.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment. Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps.	Agreecultural machines
Agreecultural machines	SM 3262	BS	5.0	Agrarian Technique and Technology	3	2	Basics of organization of wheeled and casterpillar machines, Electrical engineering and the basics of electronics	Installation, testing and operation of technological machines	Possession of knowledge on the device of agricultural machines and their adjustment to the specified working conditions, the basic principles and laws of interaction of the working bodies of machines with the processed material, skills in assessing the quality of technological operations, methods and means of quality control of agricultural machines, skills in using technical means for electrification and automation of technological processes.	Diagnose and determine the causes of malfunctions, study materials science, technology of structural materials and modern materials, corrosion and material protection methods, basics of the theory of wear of parts, repair technology, plan and carry out installation, testing and operation of machines and equipment. Organize highly efficient operation of machines, apparatus, equipment and technological equipment in production, generate reports on the repair program implementation. Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps.	Machines and equipment for processing of crop products

Welding technologies of food equipment	TSPO 3335	AS	5.0	Technological machines and equipment	3	2	Materials in engineering design, Machine elements and design principles, Design of machine fixtures	Installation, testing and operation of technological machines, Production processes (CAM, DTSP)	Study of theoretical bases of welding process, types and methods of welding and welded joints for machines and equipment of food production, the concept ofelectric arc and its application for welding, thermal processes in welding, weldability and its types. Consideration of welding materials, power sources for welding, devices and purpose of equipment for various types of welding. Study of different welding technologies (manual arc welding, automatic submerged arc welding, in shielding gases). Study of the features of weldability of metals used in the construction of food machinery and equipment.	Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps.	Fundamentals of welding technology, Multimedia technologies (Minor)
Fundamentals of welding technology	OTS 3334	AS	5.0	Technological machines and equipment	3	2	Materials in engineering design, Machine elements and design principles, Design of machine fixtures	Installation, testing and operation of technological machines, Production processes (CAM, DTSP)	Study of theoretical basis of welding process, types and methods of welding and welded joints, concepts of electric arc and its application for welding, thermal processes in welding, weldability and its types. Consideration of welding materials, power sources for welding, devices and purpose of equipment for various types of welding. Study of different welding technologies (manual arc welding, automatic submerged arc welding, in shielding gases).	Select optimal options for setting up, adjusting and algorithms for maintenance, repair and control of machine tools, manipulators, robot systems, welding equipment and technological machines, develop technological processes and maps.	Welding technologies of food equipment, Multimedia technologies (Minor)
Multimedia technologies (Minor)	MTM 3329	AS	5.0	Higher Mathematics	3	2	Information and communication technologies, Artificial intelligence basics, Digital competencies in professional activities (Minor)	Production processes (CAM, DTSP)	The discipline provides features and procedure of designing multimedia objects, processing of multimedia information, functionality of modern programs and information and communication technologies used to create and modify multimedia products to solve practical problems in professional activities.	Apply modern methods of chemistry, physics, mathematics, the basics of artificial intelligence technology and modern information and communication technologies to solve problems arising in the study of fundamentals and major disciplines. Study technical and software tools of engineering and computer graphics, establish the capabilities of machine design and metalworking modeling systems, use multimedia technologies to create and modify multimedia products in professional activities.	Welding technologies of food equipment, Fundamentals of welding technology
Calculation and design of food production machines	RPMPP 4258	BS	5.0	Technological machines and equipment	4	2	Materials in engineering design, Machine elements and design principles, Fundamentals of technology processing industries, Food engineering technology	Graduation project (work)	Concepts and definitions that characterize the principles, methods, techniques and rules of design and construction, as well as forming ideas about design objects, their properties and indicators, are generally accepted in engineering practice. The quality of the designed machine is evaluated by a number of theoretically justified quantitative indicators, the main of which are economic (machine utilization rate, profitability, economic effect, etc.) and design perfection (coefficients of unification, standardization, normalization levels, etc.). No less important are the principles and methods of designing machines that do not have a quantitative assessment: the formation of derivative machines based on the original model, the reduction of the nomenclature due to the rational choice of type and the inclusion of development reserves and other methods in the design.	Develop and describe projects of mechanical engineering enterprises, develop technological process of parts manufacturing, analyze normative-technical documentation and measuring systems. Study technical and software tools of engineering and computer graphics, establish the capabilities of machine design and metalworking modeling systems, use multimedia technologies to create and modify multimedia products in professional activities.	Mechanical and design assembly room

Mechanical and design assembly room	PMSC 4215	BS	5.0	Technological machines and equipment	4	2	Materials in engineering design, Machine elements and design principles, Basics of organization of wheeled and casterpillar machiness, Technology of agricultural engineering	Graduation project (work)	Machines, technologies, units, complexes of primary grain processing. Machines, Purpose, device, technology, equipment and complexes of primary processing of potatoes. Machines, technologies, equipment and complexes of primary processing of root crops. Machines, technologies, equipment and complexes of primary processing of fruits and vegetables.	Develop and describe projects of mechanical engineering enterprises, develop technological process of parts manufacturing, analyze normative-technical documentation and measuring systems. Study technical and software tools of engineering and computer graphics, establish the capabilities of machine design and metalworking modeling systems, use multimedia technologies to create and modify multimedia products in professional activities.	Calculation and design of food production machines

The catalog of elective subjects was approved by the Academic Quality Council of the Technical Faculty, Protocol No.16a dated June 21, 2024

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