

**Profile of the educational and professional program
in specialty 226 Pharmacy, industrial pharmacy**

1 – General information	
Full name of the institution of higher education and structural unit	Kyiv National University of Technologies and Design, Department of Industrial Pharmacy Qilu University of Technology
Higher education degree and qualification in the original language	Level of higher education- master's Higher education degree (Foreign Degree) - Master Degree Specialty code - Pharmacy, industrial pharmacy
The official name of the educational program	Industrial pharmacy
Type of diploma and scope of educational program	Master's degree, single, 90 ECTS credits
Availability of accreditation	Certificate of accreditation of the specialty UD № 11007789 from 08.01.2019
Prerequisites (Duration of study and degree certificate)	Retained student status and postponed graduation cannot exceed 5 years. Degree certificate: Graduate students in pharmaceutical engineering successfully complete all the courses required by the training plan jointly developed by the Two Sides, and pass the defense organized by the Academic Committee of the Kiev College to obtain the graduation of Qilu University of Technology Certificate and Master's Diploma Pharmacy, Industrial pharmacy of Kiev State University of Technology and Design (Kyiv's Diploma Pharmacy, Industrial pharmacy). The style and effectiveness of the diplomas and degree certificates obtained by the students of the Kiev College are the same as the certificates issued by the first and second parties to the corresponding majors of the national students. Respective countries.
Language (s) of training	English
Term of the educational program	Until July 1, 2024
Internet address of the permanent placement of the description of the educational program	http://knutd.edu.ua/ekts/
2 – The purpose of the educational program (Training Objectives)	
<p>1. To master the basic theory of Marxism, to establish patriotism and collectivism, to adhere to discipline and law, to have a strong sense of professionalism and responsibility, to have good moral qualities and academic knowledge and to have physical and mental health;</p> <p>2. To become an internationalized person who can use English industry, read and search for foreign literature, has an international perspective, knows international rules, has the opportunity to cooperate and implement innovations, and can participate in international affairs and international competitions;</p> <p>3. Master a solid basic theory and relevant professional knowledge in the field of pharmaceutical engineering; to seize advanced technologies and technical means to solve this field; understand the status of research and development trends in this area; have the ability to conduct engineering technology research and development and innovation in this area; ability to independently perform engineering projects and engineering management in this field;</p> <p>4. Ability to apply knowledge and skills to address common problems in the pharmaceutical industry, including pharmaceutical manufacturing technologies, active pharmaceutical ingredient research and drug development, new technology development and improvement of existing</p>	

technologies and controls on existing products and technologies.	
3 – Characteristics of the educational program	
Subject area (Credit requirements and curriculum)	71.0% of required courses, of which: state courses 32.3%, professional courses 29.0%. The Master's program in Pharmaceutical Engineering has 2 years and 16 courses, and the total number of credits is usually 31 credits. 10 credits for Chinese public courses, 9 credits for professional degrees, 9 credits for elective courses and 3 credits for practical courses. Of these, 9 courses are taught by teachers selected by Kyiv State University of Technology and Design. China and Ukraine closed one course, and the remaining six Chinese courses were taught by Chinese schoolteachers.
Orientation of the program	Educational and professional program
Them ainfocus of the program and specialization	General program: Industrial pharmacy. Emphasis: - master solid basic theories and relevant professional knowledge in the field of pharmaceutical engineering; to seize advanced technologies and technical means to solve this field; understand the status of research and development trends in this area; to carry out engineering technological research and development and innovation in this field; independently carry out engineering projects and engineering and technical management in this area; - solving typical problems in the pharmaceutical industry, including technology of pharmaceutical production (production), research of active pharmaceutical ingredients and drug development, development of new technologies and improvement of existing technologies, control of raw materials, reducing the quality of intermediate products.
Features of the program	The training of postgraduate students in the field of pharmaceutical engineering mainly involves a combination of curriculum, training, research training, international academic exchange and training, as well as dissertations and implements individual leadership or team leadership. The course employs foreign experts, the method of teaching English.
4 – Suitability of graduates for employment and further study	
Suitability for employment	The graduate is suitable for work in the field of scientific and technical activities in the specialty
Fur the rtraining	Lifelong learning to enhance professional, scientific and other activities
5 – Teaching and assessment	
Teaching and learning	Adopt the method of full-time training. Types of courses: Lectures, experiments, tutoring. Teaching methods: Full-time teaching methods: dictation, presentation (application in lectures and independent work of students), derivative method (application of rules and laws in laboratory research training), problem-based teaching method, research method (students) (Used while working in laboratories). Testing methods: oral test (in the process of preparing laboratory tests, using the appropriate form to check the quality of educational materials), written test (on site), experiment, test (used in Internet monitoring). Final format: Exam, test. Means of detecting learning outcomes: list of test questions in the classroom, total test sets, total test questions.
Assessment (Medium-term screening)	Graduate students in pharmaceutical engineering are implementing an intermediate evaluation and selection system, which is completed by the eighth week of the second semester. Assessment is divided into three levels of excellent, qualified and unqualified. Graduate students with excellent and qualified grades can enter the next stage of study. Graduate students with unqualified grades cannot enter the next stage of study, and they need

	to complete unqualified courses. Go to the next stage of training.	
6 – Program competencies		
Integral competence (IC)	Ability to solve complex problems and problems in the pharmaceutical field of professional activity and / or in the learning process that involves research and / or innovation	
General competencies (GC)	GC 1	Ability to abstract thinking, analysis and synthesis.
	GC 2	Ability to apply knowledge in practical situations, to accept reasonable decisions to adapt and act in a new situation.
	GC 3	Ability to communicate public and foreign (business) language both orally and in writing.
	GC 4	Ability to search, process and analyze information from different sources.
	GC 5	Ability to plan and manage time.
	GC 6	Ability to act on the basis of ethical considerations (motives).
	GC 7	Ability to learn and master modern knowledge.
	GC 8	Ability to work independently and in a team.
Professional competencies (PC)	PC 1	Ability to demonstrate knowledge of modern technologies for the production of active pharmaceutical ingredients (API) and medicines (drugs), the latest technological and special equipment.
	PC 2	Ability to demonstrate knowledge of the pharmaceutical system quality, standardization of drugs, validation of technological processes and analytical methods, analysis and risk assessment for quality.
	PC 3	Ability to demonstrate knowledge of design / reconstruction of chemical and pharmaceutical enterprises.
	PC 4	Ability to apply basic methods of analysis and pharmaco-technological testing of APIs and drugs in research and production activities.
	PC 5	Ability to develop / select the optimal dosage form of API, excipients; chemical, technological and hardware schemes of API and drug production.
	PC 6	Possession of modern research methodology and experimental research methods.
	PC 7	Ability to use software for experimentation, process monitoring.
	PC 8	Ability to apply domestic and international standards, guidelines, legislation on the development, production and circulation of drugs in research and production activities.
	PC 9	Ability to plan, organize and manage the technological process of production of APIs and drugs in the conditions of pharmaceutical enterprises, including the choice of technology and equipment in accordance with the requirements of Good Manufacturing practice (GMP) and life safety.
	PC 10	Ability to demonstrate the skills of presenting scientific material and arguments of written / oral information to the audience.
	PC 11	Ability to carry out development and design activities production, validation and registration documentation.
	PC 12	Ability to develop methods of quality control of drugs, API and excipients using physical, physico-chemical and chemical control methods.
	PC 13	Ability to design the production of API and drugs in accordance with GMP requirements, to conduct exploratory and expert work at project development.
7 – Program learning outcomes		

Know ledge and understanding:	
PLO 1	Know modern mathematical methods and models, to the extent necessary to have a mathematical apparatus for their use in the chosen profession.
PLO 2	Know the main laws, patterns, rules and principles of modern production technologies of APIs and drugs, the level of knowledge and understanding of which is sufficient to perform research at the current level, the introduction of new technologies in production, planning / organizing and managing the process.
PLO 3	Know modern methods of development / selection of the optimal dosage form of API, excipients; chemical, technological scheme of production of API and drugs for technology transfer and implementation of innovative projects.
PLO 4	Know the laws, rules and principles of pharmaceutical quality system development, including pharmaceutical development, validation of process and analytical methods, analysis and risk assessment for quality.
PLO 5	Know the rules and principles of design of API and drug production sites, "clean" premises taking into account GMP requirements, analysis and risk assessment for drug quality.
PLO 6	Know the principles and methods of standardization and quality control of drugs, monitoring of the technological process.
PLO 7	Know modern information technology; software and Internet resources for use in the chosen profession.
Application of know ledge and understanding (skills):	
PLO 8	Use the knowledge of modern technologies of production of API and drugs in practice, including pharmaceutical development, planning and organization of production.
PLO 9	Apply knowledge of domestic and international standards, guidelines, legislation governing the development, production and circulation of drugs in the development and streamlining of regulatory and technical and registration documentation for new and existing in case of improving their composition, changes in production.
PLO 10	Apply knowledge of the principles of design of API and drug production sites, "clean" premises in practice (project development, technology transfer).
PLO 11	Use modern information and communication technologies in professional activities.
PLO 12	Be able to organize and perform work on pharmaceutical development, standardization and quality control, process monitoring, analysis and risk assessment, validation of technological processes and analytical methods.
PLO 13	Be able to develop chemical, technological and instrumental schemes for the production of APIs and drugs, perform technological calculations.
PLO 14	Be able to choose and calculate the required amount of basic and auxiliary equipment for the production of APIs and drugs, taking into account modern requirements for the technological process and product quality.
PLO 15	Be able to plan and organize activities aimed at improving the quality and safety of pharmaceutical products, improvement of technological process, introduction of pharmaceutical quality system.
Formation of views:	
PLO 16	Be able to communicate orally and in writing in their native language, English (or other foreign language), including special terminology when conducting a literary search, teaching written and oral research results.
PLO 17	Apply business communication in the professional sphere, knowledge of the basics of business communication in professional activities.
PLO 18	Be able to lead a discussion and teach disciplines in the specialty for the training of junior specialists and bachelors in the pharmaceutical industry.
PLO 19	Be able to summarize information and present it with emphasis on critical assessment
PLO 20	Be able to convey complex ideas and argue them.
8 – Resource support for program implementation	

Staffing	All teachers who, according to the educational and professional program (qualification) correspond to the profile and direction of disciplines, have the necessary experience of pedagogical work and experience of practical work. Foreign teachers take part in the process
Logistics	Logistics allows to fully ensure the educational process during the educational cycle of the educational program.
Information and educational and methodical support	The program is fully equipped with an educational and methodological set of components of the educational program, the availability of which is presented in the modular environment of the educational process KNUTD
9 – Academic mobility	
National credit mobility	Provides the possibility of academic mobility in some components of the educational program, ensuring the acquisition of general competencies.
International credit mobility	The program develops prospects for participation and internships in research projects and academic mobility programs abroad.
Training of foreign applicants for higher education	The main components of the educational program are educational and methodical complex for foreign students in English.

2. The list of components of the educational-professional program and their logical sequence

List of components of the educational-professional program of the second (master's) level of higher education

Code	Components of the educational program (academic disciplines, term papers (projects), practices, qualification work)	Number of credits	The form of the final control
1	2	3	4
Mandatory components of the educational program			
Public Degree Courses			
EC1	Graduate English	3	test
EC 2	Methodology of modern research with basics intellectual property	3	examination
Total from the cycle		6	
Professional Degree Courses			
EC 3	Technologies of active pharmaceutical ingredients	6	examination
EC 4	Special equipment and design of chemical and pharmaceutical productions	6	examination
EC 5	Pharmaceutical development of medicines	3	examination
EC 6	Validation of technological process and analytical methods	3	examination
EC 7	Industrial biotechnology of medicines	3	examination
EC 8	Pharmaceutical system and quality control of medicines funds	3	test
EC 9	Research practice	6	test
EC 10	Pre-diploma practice	9	test
EC 11	Master's thesis	21	certification
Total from the cycle		60	
The total amount of required components		66	
Elective Courses			
DFCS	Disciplines of free choice of the student	24	test
TOTAL VOLUME OF THE EDUCATIONAL PROGRAM		90	

3. Forms of certification of applicants for higher education

Forms of certification of applicants for higher education	Attestation of graduates of educational programs is carried out in the form of public defense of diploma master's thesis.
Document of higher education	Master's degree with the award of educational qualification: Master of Pharmacy, Industrial Pharmacy

4. Matrix of correspondence of program competencies to the components of the educational-professional program

	GC 1	GC2	GC3	GC4	GC5	GC6	GC7	GC8	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7	PC 8	PC 9	PC 10	PC 11	PC 12	PC 13
EC 1	*		*	*			*	*						*						*	
EC 2			*	*			*									*			*		
EC 3		*			*		*		*	*			*		*		*	*			
EC 4	*		*	*				*	*	*	*						*	*			*
EC 5	*	*		*		*		*				*		*	*			*	*	*	*
EC 6		*		*		*		*	*			*	*	*	*	*		*		*	*
EC 7			*	*		*	*		*	*			*		*	*					
EC 8	*								*				*	*						*	
EC 9	*		*	*	*			*		*	*	*	*				*	*	*		
EC 10	*		*	*	*			*					*	*						*	
EC 11	*		*	*				*	*	*	*	*	*				*	*	*		

5. Matrix for providing program learning outcomes with relevant components of the educational-professional program

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO10	PLO11	PLO12	PLO13	PLO14	PLO15	PLO16	PLO17	PLO18	PLO19	PLO20
EC 1	*														*					*
EC 2			*		*					*					*		*			
EC 3		*	*		*		*			*	*		*	*					*	
EC 4	*	*			*	*			*	*			*		*					
EC 5		*	*	*					*			*				*			*	*
EC 6		*	*	*					*			*				*			*	*
EC 7		*	*			*		*	*			*			*	*	*	*		
EC 8	*							*					*	*			*	*		
EC 9	*	*				*	*				*		*	*			*		*	
EC 10	*				*	*	*				*		*	*			*		*	
EC 11		*	*		*					*						*				*