

Code and title of specialty (direction): 131 "Applied Mechanics"

Title of specialization: Engineering Technology

Code and title of the field of knowledge: 13 "Mechanical Engineering"

Qualification: Master of Applied Mechanics in Engineering Technology

Number of credits: 120 ECTS credits

Grade of higher education: second (Master) corresponds to the seventh qualification level of the Ukrainian National Framework of Qualifications.

Requirements to the previous education grade: according to the article n. 5 of the Ukrainian law "On Higher Education" a person has the right to obtain a Master's degree in case of possession of Bachelor's Degree or Specialist's Degree.

Qualification requirements: the higher education document is issued to a person who had successfully completed the educational program and was certified. The final attestation is carried out on the basis of evaluation of the degree of academic success, quality evaluation of practical tasks completed by the graduates, according to the present educational and professional program and the degree of development of competences. Form of attestation – defence of a Master's thesis.

Program study results: The graduate should possess the following competencies: understanding and perception of ethical conduct in relation to other people and nature (principle of bioethics); the necessity of and adherence to healthy lifestyle; ability to learn; capacity for criticism and self-criticism; creativity, ability for systematic thinking; adaptability and communication skills; perseverance; concern about the quality of work done; tolerance; environmental competence. Have a basic understanding of the fundamentals of philosophy, psychology, pedagogy, contributing to the development of general culture and socialization, the tendency to ethical values, knowledge of national history, economics and law, understanding causal relationships of society and the ability to use them in professional and social activities; basic knowledge of the fundamental branches of mathematics, to the extent necessary to command mathematical tools that are necessary for the study of subjects of the technological direction. Have the ability to use mathematical methods for strength calculation for details, to determine the physical characteristics of the cutting process by cutting edge and abrasive cutting tools. To calculate the cutting procedures and do their optimization. Identify mathematical models for different types of processing and using them to manage the processing. Perform the necessary economic calculations. Have a basic knowledge of computer science and modern information technologies, which are necessary for the practical use of modern means of design automation, processes production design and management of CAD/CAM/CAE-systems. Performing calculations of standard machine parts, machine tools using modern software packages such as Matcad, Matlab; basic knowledge of theoretical mechanics, strength of materials, machine parts interchangeability, standardization and technical measurements, to the extent necessary for technological disciplines understanding; basic knowledge of disciplines: cutting theory, design and manufacture of blanks, which are necessary for the development of engineering disciplines engineering technology, technological processes for CNC machine tools, cutting process management and etc.. Have the ability for written and oral communication in their native language; foreign language proficiency sufficient to perform professional duties; have computer skills; information management skills; research skills;

To be able to apply the basic provisions of technological disciplines for the process of establishing a new production, design proposals for upgrade of the existing and manage the production with the desired technical and organizational conditions; be able to perform market

research and to develop proposals for the market launch of new competitive products; be able to improve individual professional skills and practical and methodological skills, to understand and analyze supply catalogs and advertising exhibition proposals; be able to organize and conduct training to improve the skills of the unit, to nurture the responsibility for production of quality products; be able to analyze and improve the moral and psychological state of the working collective; apply knowledge of the basics of planning, organization and management of production processes to ensure the release of competitive products. Be able to design specific technological operations of cutting and technological processes of various class machine parts processing including using computer-aided design like CAIP TII (CAD TP), CAPP/CAM-systems; design machine tools, to perform typical calculations and assess the accuracy of the blank positioning; reasonably determine effective tool materials, construction of tools and geometric parameters of a cutting edge; determine the cutting conditions for all kinds of cutting processing and perform their optimization, including using modern software packages; develop control programs to implement processing on CNC machines, multi-purpose machines and other machine tool systems, including using modern CAM-systems; develop mathematical models of certain types of cutting processing and manage the process of processing; perform the necessary economic calculations to ensure the effective conditions of processing; conduct research on specific processes of cutting during technological operations in processing, during which may arise issues of ensuring sustainable production of machine parts with desired quality characteristics; to ensure stable production of competitive products during a specified period of time; provide safe working conditions and environmental protection.

Employment competences: Master of specialty 131 “Applied Mechanics” may hold positions in companies, small companies and institutes of engineer-mechanic, engineer (other branches of engineering), engineer-researcher, teacher.

Further study perspective: Master of specialty 131 “Applied Mechanics” may continue his education for the Candidate’s Degree.

Department graduating a student with degree: Machine Science and Industrial plant equipment

Institute / Faculty: Engineering Faculty

Educational program supervisor: Professor, Doctor of Technical Sciences, Archipov O. G., arkhypov@gmail.com; Mob. tel. 050 987 9888