

EXPERT OPINION for the modular educational program of the specialty 6B07113 Robotics and Mechatronics

The modular educational program (MEP) of the specialty 6B07113 Robotics and mechatronics, submitted for examination, was developed in full accordance with the requirements of the standard curriculum of the specialty and individual curricula and students. The curriculum defines a list of all academic disciplines of the compulsory component and the elective component, the complexity of each academic discipline in credits, the sequence of their study, types of training sessions and forms of control.

The developed MOP specialty 6B07113 - Robotics and mechatronics includes 7 modules.

The study of the disciplines of the social module contributes to the use of the main provisions and methods of social, humanitarian and historical sciences in solving social and professional problems, to analyze socially significant processes and phenomena. The discipline of health contributes to the formation of the physical culture of the individual and the ability to use various means of physical culture, sports and tourism for the preservation and promotion of health, psychophysical training and self-training for future professional activities.

The module of multilingual training forms the ability and fluency in the state language, increasing the initial level of foreign language proficiency achieved at the previous stage of education.

The module of physical and mathematical training and computer science, which allows students to form a fundamental knowledge base and skills in physics and mathematics, on which the necessary skills are developed: critical thinking, a scientific way of thinking and an analytical approach to solving scientific problems in these subjects.

Assimilation by students of a practice-oriented module forms direct practical preparation for independent work in the specialty; deepening and consolidating theoretical knowledge, gaining practical experience.

It should be noted that according to the developed educational program, a sufficient number of credits are allocated for the disciplines of basic general technical training of the module, which allows students to form the necessary mathematical apparatus, the ability to think logically and reasoned, and use basic knowledge of mathematics and fundamental sciences in cognitive and further professional activities. I consider it especially important for undergraduate students to study the disciplines of electronic and microprocessor technology. contribute to the development of the basics of electronics, electronic engineering, circuitry of digital devices, the principles of integrated circuits, the prospects for the development of microprocessor technology and the ability to use the acquired knowledge for the correct choice of circuit solutions in the development of electronic technology. The profile training module, I consider it relevant to study the disciplines of automation and mechanics, which is explained by the need to develop students' abilities to use modern automated systems for modeling and designing automatic control systems and applying the basic laws of theoretical mechanics in the most important practical applications. The disciplines of drives are aimed at developing the ability of students to calculate and design elements and devices based on various physical principles of operation.

The discipline of intellect and thinking in the developed plan is important in the development of intellectual and creative thinking of students. Programming disciplines in the developed educational program allow students to develop the ability to develop programs and their blocks, debug and configure them to solve individual problems of instrumentation.

I believe that the development of the discipline of management and measurement by students is relevant, because it provides for teaching students the basics of measuring and researching according to a given methodology with the choice of measuring instruments and processing the results.

The disciplines of robotics and technical means of automation are a further in-depth study of the disciplines of the module of automation and mechanics and allow students to clearly navigate all methods in the development and design of measuring, medical and robotic devices.

The final assessment module forms and demonstrates all general cultural and general professional competencies. The purpose of the expert opinion was to analyze the materials provided to identify the main advantages and disadvantages of the educational program submitted for examination, to issue recommendations for its further improvement. The results of an expert analysis of the disciplines included in the MEP show that they cover the entire spectrum of knowledge and skills necessary for bachelor's graduates to successfully work in the field of information-measuring systems and the creation of modern devices. The purpose of the disciplines under consideration is the development by students of basic knowledge and skills in information-measuring systems, the creation of modern devices. The contents of the disciplines included in the MEP are not duplicated, but complement each other, and are aimed at obtaining students solid knowledge in the field of instrumentation. The content of the MEP makes it possible to study the necessary theoretical knowledge and master the practical skills required in the training of personnel in this specialty. As a recommendation, one can point to the expediency of including in the curriculum courses aimed at developing the managerial skills of future specialists in the modern sector of the economy. Summing up, the considered curriculum of the educational program can be recommended for organizing the educational process in the undergraduate specialty "Robotics and Mechatronics", the development of disciplines, the proposed modules contributes to the formation of a technically professionally trained, highly educated person with a broad outlook and culture of thinking, with the necessary knowledge for further master's degree education.

**AUPET, Director of the Institute of
Telecommunications and Space Engineering PhD,
Associate Professor.**



G.K.Balbayev