

Department of the APP named after prof. V.F.Byrka

Graduates of the educational program 6B07102 "Embedded digital control systems" are prepared for the setup, operation and modernization of a complex of automatic process control systems and robotic systems. Graduates of the Bachelor's degree in the educational program 6B07102 "Embedded digital control systems" are awarded the academic degree of Bachelor of Engineering and Technology.

The sphere of professional activity of graduates is production, science, education and design organizations, whose activities are aimed at creating, implementing and operating automated control systems in various fields of human activity.

The objects of professional activity of graduates are engineering design and organization of operation of automatic control systems in various fields of human activity.

The subject of graduates' professional activity is the formation of efficient production and a comfortable human environment.

"Bachelor of Engineering and Technology" of the educational program 6B07102 "Embedded digital control systems" can perform the following types of professional activities:

production and technological: knowledge, understanding, ability to evaluate and make decisions necessary to form the required operating modes of automated technical systems and mechatronic and robotic objects; ability to assess the impact of automatic control systems on the environment and the social sphere; conducting technical, economic and environmental analysis of the impact of the introduction of automatic control systems on the environment and the social sphere.

Design and engineering: assessment, expertise and development of individual elements of automation and control of objects and processes for various purposes; development of specialized software for automated production process control systems; installation, parameterization, commissioning, operation and repair of control systems and control of production processes and mechatronic and robotic objects.

research: analysis of the efficiency and dynamic change of technological processes; development of plans, programs and methods for testing control and control systems of production facilities; creation of tools and methods for predicting the state and possible behavior of control and control systems of production processes and mechatronic and robotic objects.

organizational and managerial: development and implementation of measures to ensure energy saving of designed and operated production facilities; development of measures to organize the operation of technical means for measuring and controlling parameters of managed facilities and processes.

Areas of professional activity include:

- development and implementation of individual devices and operation of control systems for technical objects of mechatronics and robotics;
- development and implementation of individual devices and operation of automated process control systems;
- development and implementation of individual devices and operation of control systems for technological equipment and complexes;
- automatic and automated systems and means of control and management, their mathematical, informational, technical and software;
- methods and methods of their design, debugging, production and operation in various sectors of the national economy;
- objects of industry, agriculture, energy, transport, trade, medicine, etc.;
- technological and production processes;
- technical diagnostics, scientific research and production tests.Приобретаемые компетенции выпускников ОП 6B07102 «Встроенные цифровые системы управления»:
- calculation of strength, stability, reliability of mechanisms and machines, equipment and structures during design and operation;

- implementation of production and technological functioning of automation and control systems;
- carrying out design work to improve individual units and devices of automation and control systems;
- maintenance and operation of automation and control facilities and systems;
- carrying out research on automation and control tools and systems;
- application of modern software and hardware and information technologies in automation and control systems.

(OP) 6B07102 "Integrated digital control systems"

Degree awarded: Bachelor of Engineering and Technology.

The field of professional activity of graduates:

- enterprises in the field of design organizations;
- enterprises whose activities are aimed at the creation, implementation and operation of automated control systems; installation, parameterization, commissioning, operation and repair of control systems and control of production processes and mechatronic and robotic facilities;
- enterprises in the field of manufacturing prototypes, hardware and software, microprocessor automation and control;
- enterprises using standard automation, measuring and computing equipment for the design of automation and control systems;
- organizations that perform computational experiments using standard software tools in order to obtain mathematical models of processes and objects of automation and control;
- organizations using modern application software packages for computer-aided design of individual blocks of systems and automation and control tools;
- enterprises whose operation requires the development of a SCADA system of the production process with subsequent adjustment;
- modern enterprises using programmable logic controllers;
- organizations using high-level algorithmic programming languages, including for programmable logic controllers;
- objects of industry, agriculture, energy, transport, trade, medicine.

They receive additional professions: Graduates of the educational program 6B07112 "Embedded digital control systems" are prepared for the setup, operation and modernization of embedded digital control systems for technical, mobile, autonomous and distributed systems. Graduates of the Bachelor's degree in the educational program 6B07102 "Embedded digital control systems" are awarded the academic degree of Bachelor of Engineering and Technology.

The sphere of professional activity of graduates is production, science, education and design organizations, whose activities are aimed at creating, implementing and operating embedded digital control systems for technical, mobile, autonomous and distributed systems in various fields of human activity.

The objects of professional activity of graduates are engineering design and organization of operation of embedded digital control systems for technical, mobile, autonomous and distributed systems in various fields of human activity.

The subjects of professional activity of graduates are the formation of efficient production and a comfortable human environment.

"Bachelor of Engineering and Technology" according to the educational program 6B07102 "Embedded digital control systems" can perform the following types of professional activities:

production and technological: knowledge, understanding, ability to evaluate and make decisions necessary to form the required operating modes of embedded digital control systems; ability to assess the impact of embedded digital control systems on the environment and the social sphere; conducting technical, economic and environmental analysis of the impact of the introduction of embedded digital control systems on the environment and the social sphere

design and engineering: evaluation, expertise and development of individual elements of embedded digital control systems for various purposes; development of specialized software for embedded digital control systems; installation, parameterization, commissioning, operation and repair of embedded digital control systems for technical, mobile, autonomous and distributed systems in various fields of human activity.

Research: analysis of the operability and dynamic change of embedded digital control systems; development of plans, programs and methods for testing embedded digital control systems; creation of tools and techniques for predicting the state and possible behavior of embedded digital control systems for technical, mobile, autonomous and distributed systems.

organizational and managerial: development and implementation of measures to ensure energy saving of designed and operated production facilities with integrated digital control systems; development of measures to organize the operation of integrated digital control systems.

Areas of professional activity include:

- development, implementation and operation of integrated digital control systems for autonomous installations;
- development, implementation and operation of integrated digital control systems for mobile facilities;
- development, implementation and operation of embedded digital control systems for distributed technical systems.

Acquired competencies of graduates of OP 6B07102 "Integrated digital control systems":

- calculation of strength, stability, reliability of mechanisms and machines, equipment and structures during design and operation;
- implementation of the production and technological functioning of embedded digital control systems;
- carrying out design work to improve individual units and devices of embedded digital control systems;
- maintenance and operation of embedded digital control systems;
- conducting research on embedded digital control systems;
- the use of modern software and hardware and information technologies of embedded digital control systems.