GENERAL TRAINING CYCLE
Compulsory components of ERP

Business foreign language. The general aim of the program of teaching of foreign language for the professional purpose is formation students' professional linguistic competencies that will contribute to their efficient operating in cultural variety of training and professional environment. The methods of search of new information in another language sources, linguistic methods of analytical study of another language sources are learned. Students study published original literature in another language and increase their lexical and grammatical skills. Methods and linguistic peculiarities of annotation and synopsis of another language sources, the principles of translation of professional oriented another language sources are studied.

Agrarian policy. The discipline introduces the principles of formation of policy in agrarian sphere, gives the possibility to gain proficiency in methodical and methodological principles of the development and realization of the complex of actions concerning support and provision of the development of agriculture in the system of inter-branch links in national economy as well as estimate from the theoretic position practical actions of state structures concerning regulation of the agricultural production of the country.

Both national and foreign experience is studied. In case of mastering the material students get the possibility to form their own view on professional base about processes and phenomena happening in agrarian sector of the state economy.

Special Sections of High Mathematics. The main sections of high mathematics needed for research and development of electro-technologies in agriculture. Mathematical methods for solving linear and nonlinear differential equations. Matrix, operating methods. Functional series. Basic theory of random functions.

Calculations of economic efficiency of scientific developments. The feasibility of implementing scientific developments needs the calculation of economic efficiency, which should be evaluated from different perspectives. Varieties of techniques in different conditions are offered. The basis of the discipline is estimation calculations, the risks and feasibility of projects. Statistical methods, methods of expert analysis and calculations of investments are proposed.

Safety in the Area. Safety measures in normal and emergency modes of electrical installations. Safety during installation, repair and maintenance of electrical installations. Lightning agricultural facilities.

Methodology and organization of research with the principles of intellectual property. The aim of the discipline is formation of the system of knowledge in methodology, theory of method and research process, methodical support of scientific and research activity at the stages of preparation of a Master paper, formation of the ability to organize research of a specific issue using the whole complex of the traditional methods of research including general and special methods. The main task of the theoretical part of the course is introduction to students the current concepts of research creation, the principles of methodology of scientific perception and methods of research. The main task of the practical part is the development of self-education ability, mastering skills of formation and application of perceived methodological position of research. In case of mastering the course students have to improve their skills of search, assortment and processing of scientific information, accurate formulation of a problem, aim, task, object, subject, methods of research. Introduction to students the principles of intellectual property and direction of them to gain knowledge and skills concerning registration of rights of ownership, their protection, commercialization, estimation and management are envisaged.

SPECIAL (PROFESSIONAL) TRAINING CYCLE
Compulsory components of ERP

Automated Accounting of Energy and Material Resources. Concepts and Models: object, class, data, methods, access inheritance properties. Systems of objects

and classes. Designing object-oriented programs: methods and algorithms. Object-oriented languages, classification, architecture, expressive means, technology application. Interface: The rules of the organization, methods and programming tools. Object-oriented systems, methods, language and methods of programming

Features of computer modeling of systems of automation of biotechnical objects. Methods of computer-modeling systems (KMS). Structure and function of KMS. Gathering and processing information. Mathematical modeling. Algorithms of optimal and adaptive management. Implementation of control functions. Examples KMS in agriculture.

Automation of biotechnical objects: automation of technological processes. Specifications processes as facilities management and their disturbances. Principles of automated process control systems. Automation of technological processes in crop and livestock production.

Automation of biotechnical objects: automated process control systems.

Principles of control systems. Information channels and their characteristics. Identification of control objects. Algorithms management. Technical means of automation. Reliability and economic efficiency of automation.

Computer aided design systems for automation of biotechnical objects. Basic concepts and definitions. Basic concepts of electrification systems and process automation. General information about agricultural processes. Technical support of CAD. Software of CAD. Databases of CAD. Statistics and dynamics of technological objects control. Regulatory impact and organs. Automation of technological devices.

Installation, adjustment and operation of automation systems of biotechnical objects. Installation of automation circuits. Operation of equipment automation systems. Adjustment of sensors, controllers, actuators of automated control systems. The procedure for putting into operation mounted systems. Formation and organization of instrumentation and automation means in agricultural enterprise.

Artificial intelligence in automation systems of biotechnical objects. Basic concepts of neural networks. The properties of the neural network training. Hopfield neural networks. Basic concepts of fuzzy logic uzzy sets and fuzzy neural networks.

Robotic Complex and Systems. Design and simulation tasks, principles, algorithms control robotic systems and systems. Appointment, classification and objectives robotic control systems. Structure, key components of robotic control systems. Intelligent robotic systems. The system of perception and recognition information. Keeping system knowledge, problem solving and forming control actions. The system of environmental impact. Principles of robots and robotic systems. System design, manufacturing, robotics control systems. Possibilities of robots and robotic systems in the agro-industrial complex.

Intelligent Control Systems of Biotechnical Objects. Classification of types of intelligent systems. Presentation specialized development environments Intelligent Systems. Basic concepts of neural networks. Classification of neural networks and their properties. The properties of the neural network training. Neural networks counter-proliferation. Hopfield neural networks. The neural network Hemet. Basic concepts of fuzzy logic. The theoretical basis of fuzzy logic. Fuzzy sets. Fuzzy operation. Algorithm of fuzzy inference systems. Fuzzy sets and fuzzy neural network. Basic concepts of genetic algorithm.

Optional components of ERP

Optional Block by specialty

Optional Block 1 "Computer-Integrated Process Control Systems and production"

World experience of methods and means of modern automated process control. Modeling of technical and biological objects under uncertainty: Kharkiv random processes. Statistical modeling of random processes. Decision making under uncertainty using gaming techniques. Creating and working databases. Software. Technical support

of intelligent systems.

Modeling and Identification of Biotechnical Objects in Agriculture. A classification of technological processes and objects of automatic control. Methods of constructing static and dynamic objects agricultural processes and industries.

Special Systems. Special subjects in the study which students have to study methods of creating, optimizing adaptive control systems, control systems built on fuzzy logic. Creation of research systems, their configuration and optimization must take place in an environment in MatLAB Packages Simulink and Fuzzy Logis. Also laid the foundations of genetic learning of neural networks is the basis for building intelligent controllers.

Methods for Preparing Research. Within the course presents the main stages of scientific research of the problem of system-analytical position and generalized requirements for methods of materials processing research. Lecture and laboratory practical course material covers the entire range of the materials for their research publications in general and, in particular, consider writing the competent scientific text. It may be, for example, research papers, thesis or reports, reviews of scientific means ordering information, summarizing the results of the pilot study, graphical interpretation of research results and more.

Computer Integrated Control Systems. Principles of construction of control system. Information channels and their characteristics. Identification of facilities management. Algorithms management. Technical means of control system. Reliability and economic efficiency of control system.