Summary of discipline Computerised Measuring Systems. General Information
The growth pace of development and achievements in the fields of measuring and computing needs of developers of modern computer systems (CEC) providing the following requirements:
1. The widespread use of the latest components in the construction of measuring channels (VC) interface means, information processing equipment, etc;
2. significant increase measurement accuracy and speed prystro¬yiv, which receive, transmit and process information from sensors that monitor the condition and quality control facility;
3. To ensure reliable operation of all devices and pry¬stroyiv that are part of the CEC;
4. significant reduction in the number of devices with CEC me¬toyu improve the reliability of its work without decrease of technical and economic efficiency.
To ensure strict requirements for most modern CEC (primarily regarding reliability and performance) specialists - pryladobudivnyky should know the basic principles of modern KVK ovolo¬dity methods block the latest devices and distribution of tasks measuring the levels of information complexity, the wide use of information processing by using the so-called peripheral microprocessors (MP) and MP, built-in appliances and devices.
II. The purpose and objectives of the discipline
Academic discipline "Computer measuring systems" aims to help students of V course (who already have training in a wide range of applications for creating devices and devices) to obtain basic information about their association for reliable operation in automated systems for collecting and processing information using a PC. In addition, the student must obtain construction skills measurement channels and channel incentive (ie control) actions with the requirements of the accuracy and speed to ensure the quality of computer measuring complex (CEC).
The widespread introduction of microprocessor technology made it possible to go to the construction of a new class of decentralized management, measurement, treatment and control.
In the discipline of attention is directed to show the benefits of using naynovitnoyi components (especially microprocessors) in the construction of measuring channels and new means of measurement capabilities and new interfaces.
III. Estimated content of lectures
Introduction. The task of complex measurements. Modern computerized measuring systems (CEC). Automation and control measurement process. Basic concepts and definitions.
Structural organization of modern CEC. Average (classification) of objects of control. The aim of the research object of control and its influence on the technical characteristics of the CEC. CEC notability.
Principle block. Unification signals. Devices that are built according to modern international standards (LXI, LAN, etc.). Features of smart appliances and devices.
The exchange of information in the CEC. The basic principles of the transmission of measurement data. Construction of measuring channels (VC). Fiber-optic communication channel in the CEC. The combination of measuring devices in the system "star". Switching backbones interface (hardware and software). The combination of devices in the system, "ring". Systems based on the new standards LXI, LAN, etc. (especially construction). Connection modern measuring devices to a common line interface. Areas of interfaces.
Digital measuring devices (CVP) in the CEC. Classification of CVP. Basic requirements for CVP consisting CEC. Microprocessor devices (especially the functioning, the advantages). Examples.
Software-driven incentive source (control) actions. Principle of construction, choice of components. Using microprocessors. Examples.
The equipment program management and information processing. The combination of a personal computer with a metering system. Modern devices introduced measurement data from many sensors (L-fees, production company L-CARD, dimension. Microsystems, etc.).
Examples CEC building. Metrological support CEC. Criteria for selection of the structure and components of the measurement channels KVN. Ensuring reliable operation.