

# Applied Informatics

**Study programme:** B0715A270012 Engineering, S05 Machine and Process Control  
**Academic year:** 2023/2024

1. Information System - definition, components. Development Life Cycle. Agile Methodology.
2. Databases - definition, relational databases. Database application programming - data types, relationships between objects. Standardized Structured Query Language (SQL).
3. Business Intelligence. ERP Systems. Data Warehouse.
4. Industry 4.0 and trends in information systems. Information systems security.
5. LabVIEW programming tool, control elements, front panel, block diagram, basic program structure, reduction of CPU load.
6. Storing information in the computer, number formats, character sets, saving text, saving image, their use and operations with them in LabVIEW.
7. Ports and PC communication interface. Serial port, USB, Bluetooth, work with RS232 in LabVIEW.
8. Saving data to a file, text files, binary files, TDMS files, working with files in LabVIEW.
9. ISO and TCP/IP model, Network devices.
10. Fundamental of computer networks, IP addresses, network masks, network protocols, DHCP configuration, well-known ports.
11. Router configuration, router admin console, router commands and prompts.
12. Computer network routing, routing table, static path, routing protocols.
13. Principles of the web, publishing texts on the web. HTML format and its use for creating electronic texts. Cascading Style Sheets CSS.
14. Cloud computing. Application Programming Interface. Mobile apps development.
15. Arduino platform development. Development boards, sensor modules, IDE environment, syntax of language, creating Arduino applications.
16. I/O modules of Arduino platforms. Display units and use in the creation of applications.
17. Visualization of the technological process, the role of the operator's workplace and the operator's interaction with the supervisory control system, stages of development in process visualization.
18. Design of static screens, objects on screen, colors of objects, background of screens and colors of warnings and alarms, controlled and control element.
19. Division of information into screens and method of data visualization, data types of visualized variables and data formats, animations for blinking objects, graphs, trends, alarm tables, reports, messages for the operator of the supervisory system.
20. User access to visualized data, access rights in terms of security and reliability of the data provider, client-server architecture, fat and thin client, web client.