1. Typification of programming languages. Standard data structures (lists, stacks, queues, dequeues, trees, graphs) and methods of their representation.
2. Principles of functional programming (FP).
3. Fundamentals of semantics and syntax of high-level programming languages.
4. Principles of object-oriented programming (OOP).
5. Stages of development of ICT software. Continuous integration and continuous delivery (CI/CD) methodology.
6. Visual programming environments.
7. Basic methodologies in software development. Principles of Agile methodology and its variations.
8. Design and implementation of databases (DB).
9. Relational data models. Principles of the relational database.
10. Non-relational databases (DB).
11. Web application development technologies.
12. The concept of carrier signal. Modulation and detection of signals. Spectra of modulated signals.
13. The main types of modulation used in telecommunication systems.
14. Classification of messages, signals, and interference.
15. Information characteristics of message sources and communication channels.
16. Quality of service parameters. QoS Modelling.
17. Architecture of open system interaction.
18. Ways to transition to next-generation communication networks.
19. Features of personal, local, and urban radio access networks.
20. Definition of the radio frequency spectrum and its main characteristics. Methods of managing RF spectrum usage.
21. Switching methods in communication networks.
22. Sorting and search algorithms.
23. Typical programming development and debugging environments.
24. Differences in the following approaches in cloud computing: PaaS (Platform as a Service); IaaS (Infrastructure-as-a-Service); SaaS (Software as a Service).
25. Programming languages. Compilers and interpreters. Static and dynamic languages. Areas of functional application.
26. Working with data in the chosen programming languages (C, C++, Python, Perl, PHP, JavaScript, Shell...).
27. The concept of platform virtualization. Advantages over the traditional "one computer — one platform" approach. Containerization.
28. Basic programming constructions in the chosen programming languages (C, C++, Python, Perl, PHP, JavaScript, Shell...).
29. Basic algorithms and principles of intelligent data analysis and machine learning.
30. Version control systems (SCM) in software development. Distributed version control systems. Features of the Git system.