

**Applied Computer Science**  
**Specialization: Computer Engineering**

**Range of diploma examination:**

1. Automatic program parallelisation, dependencies in sequential programs, identification of parallelism
2. Basics of requirements engineering.
3. Business modelling, BPMN main ideas, and fundamental concepts.
4. Characteristics of data model, storage and data access methods for data: streaming and temporal.
5. Classification of video games platforms.
6. Classification versus Clustering. Exemplary methods.
7. Column data storage in databases: basic properties, performance, applications.
8. Designing of multimedia interface of computer applications.
9. Differences between IPv4 and Ipv6.
10. Evaluations of parallel systems: performance metrics, scalability of parallel systems, Amdhal, Gustafson and other laws.
11. Evolutionary Computation.
12. Fusion of knowledge acquired from experts and discovered from data.
13. Incompleteness and uncertainty of knowledge.
14. Internet and Web services Architecture. Web and P2P systems.
15. Measurement, estimation and prediction of communication time in the Internet.
16. Methods, techniques and tools used for designing and construction of mobile systems.
17. Modeling and meta-modeling.
18. Modern methods used in research methodology.
19. Nielsen's Usability Heuristics.
20. Patterns (architectural, design, program).
21. Postulates of research methodology.
22. Progress monitoring in software project.
23. Project team management.
24. Properties and scope of using UML.
25. Query processing and optimization methods in relational databases.
26. Requirements elicitation techniques requirements classification, characteristics of requirements quality.
27. Rule-based knowledge representations in decision support systems.
28. Software project risk management.
29. Software project scheduling.
30. Stages and roles in the development of video games.
31. Static and dynamic interconnection networks, typical topologies, different routing strategies.
32. The Web Server model. Access and scheduling algorithms for HTTP requests in a Web Server.
33. Time and cost estimation in projects — main issues and challenges.
34. Topologies of Computer Network.
35. Use-cases, statecharts, sequence and activity diagrams.
36. User experience research methods and tools.