

DATA SCIENCE  
M.Sc. examination topics (examples)

1. Algorithms complexity
2. Normal forms of relational databases
3. Properties of object-oriented programming
4. Methods of software testing
5. Stack, queue, priority queue – implementation examples
6. Tree structures (B-trees, AVL trees, red-black trees)
7. Sorting algorithms
8. Dictionary as an abstract type (operations). Structures used for dictionary implementation
9. Interpolation and its applications
10. Development of a project schedule and Gantt chart
11. Database transaction properties
12. Choosing the appropriate neural network architecture for a particular task realisation
13. Estimators: basic properties and construction methods
14. Basic concepts of testing hypotheses and exemplary statistical tests
15. Logistic model: fitting and inferring parameter significance
16. Batch and stream data processing
17. Architecture patterns for Big Data storage and processing platforms
18. Optimization in SVM classifier
19. Optimization methods for LASSO models fitting
20. Linear regression model: fitting and parameter testing
21. Evaluating classifier performance
22. Ensemble methods
23. Feature selection for high-dimensional problems
24. Decision and regression trees
25. Clustering algorithms
26. One and multi-dimensional data exploration techniques
27. Bias-variance of classifiers
28. Text processing and model building on text data
29. Deep learning models vs. multilayer perceptron