



Perspektywy



JAVA CORE

Program of educational discipline

Program budget

№	Indicator	Value
1	Approximate student capacity, persons	200-250
2	Total hours	110
3	Lecturers pay per hour, EUR	24,5
4	Total lecturing cost, EUR	2700
5	Total administrative cost, EUR (15%)	400
6	Total course cost, EUR	3100

This course is prepared for both students with minimal programming skills and those who wish to improve their knowledge of the Java language. To master the course, it is desirable to have at least basic knowledge of procedural and object-oriented programming, theory of algorithms. These 110 hours courses will be devoted to the study of Java Core, during which the following topics will be considered:

Topic 1. Features of the Java programming language

- 1.1. History of development and application
- 1.2. The structure, functions and operation of the JVM

Topic 2. The lexical structure of the language

- 2.1. Main operators
- 2.2. Types
- 2.3. Arrays
- 2.4. Construction of classes
- 2.5. Processing deadlines

2.6. Regular expressions

2.7. Congestion resolution

Topic 3. OOP in Java

3.1. Principles of OOP

3.2. Abstract classes

3.3. Interfaces

3.4. Nested, local and anonymous classes.

3.5. Access modifiers

3.6. Types of relationships between classes and interfaces

3.7. MVC architectural pattern

3.8. Creating and using packages

Topic 4. Exceptions and generalized programming

4.1. Exceptional situations

4.2. Generalized programming in the Java language (Generics).

Topic 5. Architecture and principles of software design

5.1. Software architecture

5.2. Software design principles and patterns

Topic 6. Collections (Java Collections Framework)

6.1. Using collections

6.2. Hierarchy of collections

6.3. Realization of collections

Topic 7. I/O streams

7.1 Flow organization

7.2. Serialization

7.3. Work with files

7.4. Work with inheritance

Topic 8. Lambda expressions in Java

8.1. The concept of lambda expression

8.2. Functional interfaces

8.3. Fields of visibility

Topic 9. Execution threads.

9.1. Threads and the JVM

9.2. A lot of current

9.3. Interaction of streams.

9.4. Synchronization

9.5. Organization of competitive access

Topic 10. Reflection. Internalization and logging.

10.1. Reflection

10.2. Internalization

10.3. Logging in

Topic 11. SLE and unit testing

11.1. Version control systems

11.2. Modular testing

Most classes will be followed by short tests, but without actual assessment. The main purpose of conducting tests is to check whether students have remembered something and, perhaps, to highlight topics that should be considered in more detail.

A large number of tasks of varying complexity will be offered for independent processing at your own will. Mandatory work on the main topics:

No. of the title of the subject of the lesson

1 Laboratory work 1. Working with loops, arrays and strings in Java.

2 Laboratory work 2. Working with classes.

3 Laboratory work 3. Using OOP and the MVC pattern.

4 Laboratory work 4. Use of generalized programming.

5 Laboratory work 5. I/O streams and serialization.

6 Laboratory work 6. Java Collections Framework

7 Laboratory work 7. Lambda expressions in Java.

8 Laboratory work 8. Multithreading.

9 Laboratory work 9. Organization of competitive access.

10 Laboratory work 10. Reflection, Logging, Internalization.