

Curricula cursului Introducere în programare (Java)

	Topic
Lab 1	Introduction <ul style="list-style-type: none"> • Short introduction to Networks, Internet, Major operating systems, JDK, JRE, Maven • Agile principles and practices, Scrum • Learn and practice useful Linux commands
Lab 2	Major programming languages Programming fundamentals: <ul style="list-style-type: none"> • Simple Algorithms, developing an analytical mindset • Introduction to Object Oriented Programming • Working in an Integrated Development Environment (IDE) – IntelliJ IDEA • Version control • Use GIT to version control your projects
Lab 3	Programming fundamentals: <ul style="list-style-type: none"> • Start writing your first console application • Java classes • Variables • Primitive Data Types
Lab 4	Extend your first console application <ul style="list-style-type: none"> • Inheritance • Methods and constructors • Simple arithmetic operations • Encapsulation • Static variables and methods • Constants
Lab 5	Extend your first console application <ul style="list-style-type: none"> • Method and constructor overloading • Method overriding • Polymorphism
Lab 6	Extend your first console application <ul style="list-style-type: none"> • Arrays • Collections • For loops
Lab 7	Finish your first console application <ul style="list-style-type: none"> • Getting user input • Error handling • Recursion • If-else statements • Abstract classes and interfaces • While loops
Lab 8	Prepare for the first exam
Lab 9	Databases <ul style="list-style-type: none"> • Basics of relational databases (database objects, structured query language, relations) – MySQL, PostgreSQL
Lab 10	Databases <ul style="list-style-type: none"> • Persisting Java objects in a database • Java Database Connectivity and Java Persistence (JDBC) • Create a Java application with database access
Lab 11	Web Servlets <ul style="list-style-type: none"> • Expose an interface for a CRUD application over the Internet using Servlets • Working with JSON data • What is Tomcat?

	<ul style="list-style-type: none"> • Use Curl or Postman to test your servlets
Lab 12	<p>Web Graphical User Interfaces</p> <ul style="list-style-type: none"> • Introduction to HTML, Javascript, JQuery and Bootstrap • Add a simple web interface for your application
Lab 13	<p>Web Graphical User Interfaces</p> <ul style="list-style-type: none"> • Continue working on the Web Graphical User Interface • HTML, CSS, Javascript, JQuery
Lab 14	<p>Spring Boot - Introduction</p> <ul style="list-style-type: none"> • What is Spring Boot? • See an example of a Spring Boot application • Inversion of Control (IoC) • Spring Beans • Dependency Injection • Spring Boot Auto-configuration • Very short introduction to Aspect Oriented Programming (AOP)
Lab 15	<p>Spring Boot – The persistence layer</p> <ul style="list-style-type: none"> • Start writing a Spring Boot web service • YAML configuration files, working with multiple environments • Easy Database control with Spring Data JPA • Defining the business logic of your application in a Spring service • Working with Data Transfer Objects (DTOs) • Logging information with Spring’s Logback • Spring Boot Integration Tests
Lab 16	<p>Spring Boot – The service and the REST controller layers</p> <ul style="list-style-type: none"> • Queries derived from method names in Spring repositories • Manually defined queries in Spring repositories • Exposing REST endpoints for your web service • Interactive API Documentation using Swagger UI • Mapping entity relationships with Hibernate (OneToOne, ManyToOne, ManyToMany)
Lab 17	<p>Spring Boot – Finish your first web service</p> <ul style="list-style-type: none"> • Spring Boot recap • Finish implementing your first web service • Start adding a graphical user interface for your application using Thymeleaf or Html, Javascript, JQuery and Bootstrap
Lab 18	<p>Spring Boot – Finish your first web service</p> <ul style="list-style-type: none"> • Spring Boot wrap-up • Finish implementing your first web service • Finish adding a graphical user interface for your application using Thymeleaf or Html, Javascript, JQuery and Bootstrap
Lab 19	<p>Unit testing</p> <ul style="list-style-type: none"> • Write unit tests for your application using Mockito and Junit • Check your code coverage in IntelliJ IDEA
Lab 20	<p>Java quiz Recap Review applications Review git repositories</p> <ul style="list-style-type: none"> ◦ Bonus: Short introduction to Caching (with Redis) for further reading ◦ Bonus: Java 8 tricks: streams and java.time
Lab 21	<p>Java quiz Review applications Review git repositories</p> <ul style="list-style-type: none"> ◦ Bonus: Continue with Java 8 tricks: streams and java.time

	<ul style="list-style-type: none">◦ Bonus: Short introduction to Messaging (with RabbitMQ) for further reading
Lab 22	<ul style="list-style-type: none">• Prepare for the final exam• Prepare for an interview, CV preparation