Module title
Advanced Java Programming

Module code
YAJP

Level
Bachelor (B.Sc.)

Hours per week
4

ECTS credits
5

Duration
1 semester

Module instructor
Prof. Dr. Jobst

Lecture type
Interactive seminar
Lab sessions

Prerequisite(s)
Fun to code; good basic knowledge of procedural programming (data types, control flow, basic algorithms, data structures, …) and object-oriented programming, (objects and classes, interfaces, generics, collections, threads, GUI), ideally in Java

Grading
Problem sets, Final exam

Objectives
- The concepts of Java are well understood and can be applied effectively as building blocks of stable applications
- Students know how to design and code in a professional manner
- Common pitfalls can be avoided

Content
If you take to programming easily most problems or requirements seem viable. But it is harder to do it well and come up with a reliable solution. Instead of exploring the world of various Java-based frameworks and platforms we delve deeper into the building blocks of the Java programming language and thus lay the foundations of a sound application design.

- Professional working environment
  - Integrated development environments
  - Code versioning
  - Build and dependency management
  - Continuous integration
- Programming approach and techniques
  - Basic development techniques
  - Object oriented design and patterns
- Advanced topics
  - Deeper look into base components (Collections, Threads, …)
  - Useful libraries extending the Java API
  - Functional programming
  - Annotations and Reflections
  - Internationalization
  - JavaFX
- Quality and Testing
  - Do’s and Don’ts in daily practice
  - Testing and testing frameworks
  - Quality assurance

Textbook/teaching material

Note: this is not the official course descriptor according to the “Studien- und Prüfungsordnung” (SPO)