Module title
Advanced Java Programming

Module code	Level	Hours per week	ECTS credits	Duration
YAJP	Bachelor (B.Sc.)	4	5	1 semester

Module instructor	Lecture type	Prerequisite(s)	Grading
Prof. Dr. Jobst	Interactive seminar Lab sessions	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	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

- Evans, B., Flanagan, D. (2014): Java in a Nutshell, 6 th ed., O'Reilly
- Spell, B. (2015): Pro Java 8 Programming, Apress/Springer
- Darwin, I. (2014): Java Cookbook, 3 rd ed., O'Reilly
- Goodliffe, P. (2007): Code Craft: The Practice of Writing Excellent Code, No Starch Press

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