Algorithmen und Datenstrukturen

Summer

(in German: Algorithmen und Datenstrukturen)

Module-ID: FIN-INF-110487

Abbreviation	Credit Points	Semester	Term	Duration	Language	Level
DSA	10	Summer	starting at 2.	1 Semester	english	Bachelor

Link:	LSF
Limited accessability:	
Responsibility:	Christian Braune
Lecturer:	Christian Braune
Classes:	• Lecture *Algorithms and Data Structures* • Exercise *Algorithms and Data Structures* • Tutorial *Algorithms and Data Structures*
Applicability in curriculum:	- B.Sc. INF (bilingual): Informatik I - Pflicht - B.Sc. INF (bilingual): Kernmodule (SPO 2027)

Intended learning outcomes:
The students

- know and understand the most important basic data structures and algorithms on these
- are able to apply these and assess which are (better) suited to a specific application
- understand predefined and create their own implementations

Content:

- Lists
- Trees
- Balanced search trees
- Heaps
- Hash method
- Graphs
- Dynamic programming
- Search in texts
- Design and analysis of algorithms

Workload:
106h attendance + 194h independent work

Pre-examination requirements:	Type of examination:	Teaching method / lecture hours per week (SWS):
In order to be able to take part in the exam, preliminary work is required. Details will be announced in the first lecture.	Written exam 120 minutes	• Lecture (4 SWS) • Exercise (2 SWS) • Tutorial (1 SWS)

Prerequisites according to examination regulations:	Recommended prerequisites:
none	• Programming skills in Java, including Object Oriented Programming and Abstract Data Types • Basic understanding of algorithms, including understanding of recursion • Understanding of runtime/cost of algorithms and its formal representation (e.g., Big-O notation) • Understanding basic methods of proof (e.g., proof by induction)

Media:	Literature:

	• Saake & Sattler: Algorithmen und Datenstrukturen • Goodrich, Tamassia & Goldwasser: Data Structures and Algorithms in Java • Sedgewick & Wayne: Algorithms • Cormen, Leiserson, Rivest, Stein: Introduction to Algorithms

Comments:
The **first assignment** may be due in the first week of the semester, which means you can work on the assignment in advance! This requires prior registration at https://aud.vc.cs.ovgu.de. Registration opens before the semester begins.

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