

Introduction to Data Structures and Algorithms (DSA)

A three-week basic preparatory course for students of Computational Engineering, including lecture and exercises (Tutorials to Introduction to **Data Structures and Algorithms - TDSA**), and a short introduction to Java

Tutor: Dr. Ulrich Klehmet

Time: September 13th to October 4th, 14:00 – 17:00 (**DSA and TDSA**)

Location: Martensstrasse 3, Room H4 (H04)

Contents:

This course introduces basic data structures and algorithms that are necessary for nearly any kind of programming task.

- We discuss elementary and structured data types such as lists, stacks, queues, trees and sets and review basic algorithms for searching, sorting, hashing and graph analysis.
- We will study techniques for determining the efficiency of these algorithms. This is important as it helps us to select suitable data structures and algorithms according to the needs of the application in mind.
- Further information during the lectures.
- In the last week we will cover the fundamentals of programming language Java, and will demonstrate and discuss these using simple examples.

Script: The script will be available at

<http://www7.informatik.uni-erlangen.de/~klehmet/teaching/SoSem/dsa>

Exercises: The theoretical exercises are part of this course.

Literature:

Introduction to Algorithms, by H. Cormen et al., MIT Press 2001, 2004 and 2009
This book contains a wealth of material that of course we will cover only partially.