Textbook


References


Goals

- To provide computer science graduate students with a broad and deep understanding of the design and worst-case analysis of advanced data structures and algorithms including: sorting, selection, data structures for disjoint sets, binomial trees, graph algorithms, etc. To expose the students to hard problems and the theory of NP-completeness.

Topics

- Mathematical Foundations including Summations and Recurrences
- Sorting and Selection.
- Advanced Techniques (dynamic programming, greedy algorithms, amortized analysis)
- Data Structures for Disjoint Sets
- Graph algorithms
- Selected Symbolic computing algorithms (if time permits)
- NP-completeness
- Approximation Algorithms (as time permits)

Academic Honesty Policy: No collaboration with anyone or anything in or outside the course is allowed on any homeworks, exams and programming assignments (yes, that excludes the internet as well). The appropriate help of the instructor and, if applicable, the TA is of course allowed and encouraged.