

Syllabus

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Note: the syllabus may undergo minor revisions throughout the course.

Abbreviations in suggested readings refer to the following textbooks:

- CLRS - Cormen, Leiserson, Rivest, and Stein, *Introduction to Algorithms (3rd edition)*
- DPV - Dasgupta, Papadimitriou, and Vazirani, *Algorithms*
- KT - Kleinberg and Tardos, *Algorithm Design*
- SW - Sedgewick and Wayne, *Algorithms (4th edition)*

Week 1 (October 12-18)

Topics

- Introduction
- Merge Sort
- Asymptotic Notation
- Guiding Principles of Algorithm Analysis
- Divide & Conquer Algorithms

Homework

- **Due October 25:**
- Problem Set #1: Divide & Conquer / Asymptotic Analysis
- Programming Assignment #1: Counting Inversions!

Suggested Readings:

- CLRS: Chapter 2, 3, and 4 (through Section 4.2), and Sections 28.1 and 33.4
- DPV: Sections 0.3, 2.1, 2.3, 2.5
- KT: Sections 2.1, 2.2, 2.4, 5.1, and 5.3-5.5
- SW: Sections 1.4 and 2.2

Week 2 (October 19-25)

Topics

- Master Method
- QuickSort

Homework

- **Due November 1:**
- Problem Set #2: QuickSort and the Master Method
- Programming Assignment #2: Counting Comparisons in QuickSort

Suggested Readings:

- CLRS Chapter 4 (Sections 4-6) and Chapter 7
- DPV Section 2.2
- KT Sections 5.2 and 13.5
- SW Section 2.3

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