

Algorithms

by

Biing-Feng Wang

Department of Computer Science
National Tsing Hua University

O-1a

Textbook

T. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, *Introduction to Algorithms*, third edition, the MIT press, 2009.

Reference

R. C.-T. Lee, R. C. Chang, S.-S. Tseng, and Y.-T. Tsai, *Introduction to the Design and Analysis of Algorithms*, McGraw-Hill, 2005.

Outline:

**35 Chapters*

I Foundations

1. The role of Algorithms in Computing
2. Getting Started
3. Growth of Functions
4. Divide-and-Conquer

II Sorting and Order Statistics

6. Heapsort
7. Quicksort
8. Sorting in Linear Time
9. Medians and Order Statistics

IV Advanced Design and Analysis Techniques

15. Dynamic Programming
16. Greedy Algorithms
17. Amortized Analysis

V Advanced Data Structures

21. Data Structures for Disjoint Sets

VI Graph Algorithms

- 22. Elementary Graph Algorithms
- 23. Minimum Spanning Trees
- 24. Single-Source Shortest Paths
- 25. All-Pairs Shortest Paths
- 26. Maximum Flow

*ignore all "★"

VII Selected Topics

- 31. Number-Theoretic Algorithms
- 33. Computational Geometry
- 34. NP-Completeness
- 35. Approximation Algorithms

21 + 5

Self-educated: Chapters 10~12, 18, 32.4

Scoring:

.Homework	20%	(best 7 times)
.Midterm Examination	35%	
.Final Examination	45%	

Office Hour: 2:00pm ~ 3:30pm (Mon.~Fri.)
(EECS R548)

* Extra classes (by TA): (Fri: 11:10 ~ 12:00)

* iLMS

不 要 在 上 課 中 使 用 電 腦 和 手 機

(累 犯 每 次 扣 5 分)