

COT-5407 Introduction to Algorithms

Catalog Description

Design of efficient data structures and algorithms; analysis of algorithms and asymptotic time complexity; graph, string, and geometric algorithms; NP-completeness. (3 credits)

Prerequisites

SCIS Graduate Standing

Type

Elective for Graduate Students

Course Objectives

Students will learn techniques for designing efficient algorithms, for elementary analysis of algorithms, for proving lower bounds, and for proving intractability.

Topics

Part I: Asymptotic Notations, Recurrence, Divide-and-Conquer, Randomized Algorithms

Part II: Sorting and Order Statistics

Part III: Data Structures: Trees, Hash Tables

Part VI: Graph Algorithms

Part IV: Dynamic Programming, Greedy Algorithms, Amortized Analysis

Optional: NP-Completeness

Textbook

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, *Introduction to Algorithms, Third Edition*, (MIT Press, 2009).

Grading Policy

Homework (problem sets 1-5): 50%

Quiz 1 (take-home): 0%

Midterm (in-class): 10%

Quiz 2 (take-home): 0%

Final Exam (in-class): 35%

Participation: 5%

Grading Scale

A 93-100 A- 90-92.99 B+ 87-89.99 B 83-86.99 B- 80-82.99

C+ 77-79.99 C 73-76.99 C- 70-72.99 D+ 67-69.99 D 60-66.99 F 0-59.99

Last Update

Wei Zeng 8/20/2016