COT 6405: Analysis of Algorithms

Catalog Description

The design and analysis of algorithms from several areas of Computer Science. Topics include graph algorithms, dynamic programming, greedy algorithms, probabilistic algorithms, linear programming, approximation algorithms and NP-completeness.

Textbook

Introduction to Algorithms, 2nd edition, by T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, McGraw Hill, 2001, ISBN: 0262032937.

Instructor Information

Dr. Mihaela Cardei, Assistant Professor of Computer Science and Engineering
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Goals

To acquire working knowledge of analysis and design techniques. To learn different methods for designing algorithms for hard problems.

Class time: TR: 12:30 – 1:50 PM

Office hours: TBA

Prerequisites by topics

1. MAD 2104 Discrete Mathematics
2. COP 3530 Data Structure
3. COT 4400 Design and Analysis of Algorithms

Tentative Topics

1. Introduction
2. Foundations: Growth of Functions and Recurrences
3. Graph algorithms: Elementary Graph Algorithms, MST, Single-Source Shortest Paths, and Maximum Flow
4. Probabilistic Algorithms
5. Dynamic Programming
6. Greedy Algorithms
7. Linear Programming
8. Approximation Algorithms
9. NP-Completeness

Grading

Assignments ……..30%
Programming Project ……20%
Two Exams……....50%