COT-6405 Analysis of Algorithms (2012 Fall)

Conference: GL139, T/R 12:30-1:45PM

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Catalog Description

Design of advanced data structures and algorithms; advanced analysis techniques; lower bound proofs; advanced algorithms for graph, string, geometric, and numerical problems; approximation algorithms; randomized and on-line algorithms. (3 credits)

Prerequisites

SCIS Graduate Standing, esp., Data Structure, Computer Programming, Algebra, Probability Analysis

Type

Required for MSCS
Elective for MSIT, MSTN, and Ph.D. students

Course Objectives

Students will learn both the elementary and advanced techniques for efficient algorithm design along with asymptotic analysis of running time or cost and intractability proof for real problems.

Topics

Introduction: Asymptotic Analysis
Divide-and-Conquer Paradigm & Randomized Algorithms
Sorting Algorithms
Advanced Data Structures
Dynamic Programming, Greedy Algorithms, & Amortized Analysis
Graph Algorithms
String Matching
Geometric Algorithms
NP Completeness
Approximation Algorithms

Textbook
Grading Policy

Homework (problem sets / programming): 30%
Quiz 1 (in-class): 15%
Quiz 2 (take-home): 15%
Final Exam (in-class): 35%
Participation: 5%

Notes: All the homework/Quiz-2 assignment, submission, and grading will be done through Moodle. g will be done through Moodle.

1. The due date for homework will be announced with homework assignment. Late homework will generally not be accepted. If there are extenuating circumstances, you should make prior arrangements with TA.
2. The answers to problem set are required to be uploaded to Moodle. TA will evaluate them and post grades there.
3. All the homework should be finished independently.
4. The take-home Quiz-2 can be done independently or in a form of study group, but finally the answer should be written down independently in your own words.
5. If writing your problem set by hand, it is a good idea to copy over your answers and scan it for uploading which will make your work neater and give you a chance to correct bugs.
6. Each problem must be written up separately. Mark the top of each sheet with the following: (1) your name, (2) the question number, and (3) the names of any people you worked with on the problem (only allowed for take-home Quiz-2), or "Collaborators: none" if you solved the problem completely alone.
7. No collaboration whatsoever is permitted on in-class quiz or exam.
8. Plagiarism and other dishonest behavior cannot be tolerated in any academic environment that prides itself on individual accomplishment.

University Policies and Regulations

1. Regulations concerning Incomplete Grades:
   http://academic.fiu.edu/polman/sec16web.htm
2. For academic misconduct, sexual harassment, religious holydays, and information on services for students with disabilities, please see:
   http://www.fiu.edu/provost/polman/sec2/sec2web2-44.htm
   http://www.fiu.edu/~eop/EOPSexH.pdf
   http://www.fiu.edu/~provost/polman/sec19web.html

Last Update
Wei Zeng 9/1/2012