Computer and Information Science and Engineering Department

COP 3530 Data Structures and Algorithms

Course Description

Various data structures (linear data structures, trees, and graphs) and algorithm design methods (the greedy method, divide-and-conquer, dynamic programming, backtracking, and branch-and-bound) are discussed and analyzed using performance estimation techniques.

Prerequisite

COP 3504 or COP 3503, with C or better grade, COT 3100 and MAC 2234, MAC 2312, MAC 3473 or MAC 3512.

Textbook

Required: Data Structures, Algorithms, and Applications in C++, Second Edition, by Sartaj Sahni, Silicon Press, 2005

Course Objectives

1. To learn how the choice of data structures and algorithm design methods impacts the performance of programs.
2. To learn object-oriented design principles.
3. To study specific data structures such as linear lists, stacks, queues, hash tables, binary trees, heaps, tournament trees, binary search trees, and graphs.
4. To study specific algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking, and branch and bound.
5. To gain experience writing programs in C++.

Topics

1. C++ Review
2. Simple sort methods and performance measurement.
3. Data representation methods and linear lists.
4. Arrays & matrices.
5. Stacks.
6. Queues.
7. Hashing and LZW compression.
8. Binary trees.
9. Priority queues.
10. Search trees.
11. Graphs.
12. The greedy method.
13. Divide-and-conquer.

14.Dynamic programming.
15.Backtracking.
16.Branch-and-bound.

Class Schedule (M, W, F 4th period, room MCCA G186)

Discussion Session Schedule (Section 1085 M 8th, Section 1087 M 9th CSE 119)

Course Work Load Distribution

- Assignments: 25%
- Exam 1: 25% (Friday, October 5th in class (from 10:40 am to 11:40 am)).
- Exam 2: 25 % (Monday, November 5th in class (from 10:40 am to 11:40 am) 8:15 pm - 9:30 pm)
- Final Exam: 25% (Tuesday, December 11th MCCA G186 7:30 am - 9:30 am)

Contact Information

Instructor	Tuba Kahveci, tyavuz@cise.ufl.edu, room CSE 442, Office Hours: M 9:30 am - 10:20 am, F 6th period (please send e-mails for appointments outside the office hours).
TA	Ali Mohsen (moali@cise.ufl.edu) Office Hours: Monday bw 5-7 pm in 309, Wednesday 5th period in E116.
TA	Xie (Andy) Xu (xie@cise.ufl.edu) Office Hours: Tuesday 6th period in 309 and Friday 2nd and 3rd in E116.
TA	Pegah Massoudi (pegah@cise.ufl.edu) Office Hours: Tuesday 8th period and Thursday 8th period in 309, and Wednesday 11th period in E116.
Course website	We'll have a course space on UF's E-learning wesbsite http://lss.at.ufl.edu