CS 3345.503 Data Structures and Introduction to Algorithmic Analysis – Spring 2020

TTH 7:00-8:15pm, ECSS 2.203

Instructor: Zach Stallbohm

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Office: ECSS 4.403

Office Hours: TBD

TA: TBA

Course Prerequisites: CS 2305 (Discrete Math I), CS 2236 (Computer Science II)

Contents Summary:

This course covers Analysis of algorithms including time complexity and Big-O notation. Analysis of stacks, queues, and trees, including B-trees. Heaps, hashing, and advanced sorting techniques. Disjoint sets and graphs. Course emphasizes design and implementation. The following are the course learning objectives:

1. Asymptotic notations, recurrences, algorithm analysis
2. Lists, stacks, queues, hashing, priority queues
3. Binary search trees, Balanced binary search trees
4. Graphs, Depth-first search, Topological ordering
5. Breadth-first search, Dijkstra's algorithm
6. Algorithms of Prim and Kruskal, Disjoint-set Union-Find problem

The course is open to undergraduates and must be taken for letter grade only.

Required Textbooks and Materials:

None

Suggested Course Materials:

- Data Structures and Algorithm Analysis in Java, (Third Edition), by Mark Allen Weiss, Published by Addison-Wesley, 2011, ISBN-10: 0132576279, ISBN-13: 978-0132576277

Assignments and Academic Calendar/Grade Scale:

- Homework (30%): The homework will be a mixture of programming assignments and written homework. **No late homework will be accepted.**
- Final Project (20%): Due on 4/28
- Midterm (20%): administered in class on 3/5
- Final (30%): administered in class on 4/30

Course and Instructor Policies:

- If you decide to stop attending class, be sure to drop the course since you will not be dropped automatically.
- All exams and quizzes will be graded by the instructor.
- All homeworks are graded by the TA.
- School Policy that 3 consecutive absences result in a letter grade drop, 4 consecutive absences result in a F

Academic Calendar:

Lecture 1: 1/14 Introduction
Lecture 2: 1/16 Recursion
Lecture 3: 1/21 Run Time Analysis (Big O)
Lecture 4: 1/23 Lists
Lecture 5: 1/28 Stacks
Lecture 6: 1/30 Queues
Lecture 7: 2/4 Trees
Lecture 8: 2/6 Trees
Lecture 9: 2/11 Trees
Lecture 10: 2/13 Hashing
Lecture 11: 2/18 Hashing
Lecture 12: 2/20 Heaps
Lecture 13: 2/25 Heaps
Lecture 14: 2/27 Review
Lecture 15: 3/3 Review
Lecture 16: 3/5 Midterm
Lecture 17: 3/10 Sorting
Lecture 18: 3/12 Sorting
3/17 and 3/19 Spring Break
Lecture 19: 3/24 Sorting
Lecture 20: 3/26 Disjoint Sets
Lecture 21: 3/31 Disjoint Sets
Lecture 22: 4/2 Graphs
Lecture 23: 4/7 Graphs
Lecture 24: 4/9 Graphs
Lecture 25: 4/14 Graphs
Lecture 26: 4/16 Project Day
Lecture 27: 4/21 Project Day
Lecture 28: 4/23 Final Review
Lecture 29: 4/28 Final Review
Lecture 30: 4/30 Final

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to http://go.utdallas.edu/syllabus-policies for these policies.

These descriptions and timelines are subject to change at the discretion of the Professor.