**CS 3345.503 Data Structures and Introduction to Algorithmic Analysis – Spring 2018**

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

**Instructor:** Zach Stallbohm

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**Office:**  ECSS 4.403

**Office Hours:** TTH 6:00 - 7:00 pm

**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.**
* Exam 1 (20%): administered in class 2/14
* Midterm (20%): administered in class on 10/11
* 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: 1/15 Introduction

Lecture 2: 1/17 Recursion

Lecture 3: 1/22 Recursion

Lecture 4: 1/24 Run Time Analysis (Big O)

Lecture 5: 1/29 Run Time Analysis (Big O)

Lecture 6: 1/31 Lists

Lecture 7: 2/5 Stacks .

Lecture 8: 2/7 Queues

Lecture 9: 2/12 Review

Lecture 10: 2/14 Exam 1

Lecture 11: 2/19 Tress

Lecture 12: 2/21 Trees

Lecture 13: 2/26 Trees

Lecture 14: 2/28 Hashing

Lecture 15: 3/5 Hashing

Lecture 16: 3/7 Heaps  
Lecture 17: 3/12 Heaps

Lecture 18: 3/14 Heaps

3/19 and 3/21 Spring Break

Lecture 19: 3/26 Review

Lecture 20: 3/28 Exam 2

Lecture 21: 4/2 Sorting

Lecture 22: 4/4 Sorting

Lecture 23: 4/9 Sorting

Lecture 24: 4/11 Disjoint Sets

Lecture 25: 4/16 Graphs

Lecture 26: 4/18 Graphs

Lecture 27: 4/23 Graphs

Lecture 28: 4/25 Final Review

Lecture 29: 4/30 Final Review

Lecture 30: 5/2 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.**