

**CS 3345.503 Data Structures and Introduction to Algorithmic Analysis – Spring 2018**  
TTH 7:00-8:15pm, ECSS 2.203

**Instructor:** Zach Stallbohm

**Email:** zachary.stallbohm@utdallas.edu

**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.**