

**UNIVERSITY OF TEXAS AT DALLAS  
COURSE SYLLABUS**

**COURSE INFORMATION:**

**Course Number:** CS 3345, Section 001

**Course Title:** Data Structures and Introduction to Algorithmic Analysis

**Credit Hours:** 3

**Term:** Fall 2023

**Meeting Time:** Mon./Wed. 1:00 pm - 2:15 pm

**PROFESSOR CONTACT INFORMATION:**

**Name:** Greg Ozbirn

**Phone Number:** 972-883-4725

**Email Address:** [ozbirn@utdallas.edu](mailto:ozbirn@utdallas.edu)

**Office Location:** ECSS 3.608

**Office Hours:** Mon./Wed. 2:30 pm – 3:30 pm, in person or in Teams

**COURSE PRE-REQUISITES, CO-REQUISITES, AND/OR OTHER  
RESTRICTIONS:**

**Prerequisites:** ((CE 2305/CS 2305) with a C or better or (Data Science major & MATH 3315)), and (CE 2336/CS 2336/CS 2337) with a C or better.

**Pre or Corequisite:** (CS 3341/SE 3341/ENGR 3341) or (Data Science major & STAT 3355).

**COURSE DESCRIPTION:**

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.

## STUDENT LEARNING OBJECTIVES/OUTCOMES

Ability to use/analyze:

- 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

## REQUIRED TEXTBOOKS AND 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

## SUGGESTED COURSE MATERIALS

Extra material may be posted on eLearning.

## ASSIGNMENTS & ACADEMIC CALENDAR

1,2	Aug 21, 23	Introduction, Chapter 1	Math/Java Review
3,4	Aug 28, 30	Chapter 1, Chapter 2	Algorithm Analysis
5	Sep 4, 6	Holiday*, Chapter 2	
6,7	Sep 11, 13	Chapter 3	Linked Lists, Stacks,
8,9	Sep 18, 20	Chapter 3, Review	Queues
10,11	Sep 25, 27	<b>Exam 1</b> (ch. 1-3), Chapter 4	Trees, BST,
12,13	Oct 2, 4	Chapter 4	Balanced Trees
14,15	Oct 9, 11	Chapter 5	Hash tables
16,17	Oct 16, 18	Chapter 6	Heaps
18,19	Oct 23, 25	Chapter 6, Review	
20,21	Oct 30, Nov 1	<b>Exam 2</b> (ch. 4-6), Chapter 7	Sorting
22,23	Nov 6, 8	Chapter 7	
24,25	Nov 13, 15	Chapter 8, Chapter 9	Union/find algorithm
	Nov 20, 22	Fall Break (no classes)	
26,27	Nov 27, 29	Chapter 9	Graphs
28,29	Dec 4, 6	Review, <b>Exam 3</b> (ch. 7-9)	

## **GRADING POLICY:**

The grade will be determined as described below. The lowest assignment score and the lowest project score are dropped to account for mistakes in submission. No other bonus work, make-up work, dropped scores, or other means of raising your grade should be expected. At the end of the semester, it is possible that grades may be curved, but a curve should not be expected.

Exam 1	20%
Exam 2	20%
Exam 3	20%
Assignment Average	20%
Project Average	20%

Letter grades are determined using the standard 10-point range for each letter, then dividing this range into three equal parts to determine the +/- designation.

## **COURSE & INSTRUCTOR POLICIES:**

Assignments and projects must be turned in on time. Due dates will be followed by a 24-hour grace period. After the 24-hour period ends, the score is recorded as a zero. It is your responsibility to upload your work early enough to avoid possible problems uploading to eLearning. It is your responsibility to ensure that you have submitted the correct items. It is recommended that you double-check your submission to ensure it is correct.

Exams must be taken on time. Exceptions require advance approval by the instructor. It is up to the instructor to determine whether an exception will be made, and will depend largely on proof of extraordinary circumstances. Otherwise, a missed exam will either incur a substantial penalty or be recorded as a zero.

Exams have time limits. Students who continue to write on the exam after time is called or who start writing before the exam begins are subject to a penalty.

Students are expected to attend all class lectures. If absent, the student is still responsible for any material covered or anything said which the student missed.

All assignments, projects and exams are to be individual efforts. You are not to collaborate with other students, give your work to other students, or to discuss solutions with other students prior to submission. Copying of

assignments, projects and exams, in whole or in part, from other students in this semester or previous semesters will be considered to be an act of scholastic dishonesty.

Grades are not based on needs or consequences, but are based only on performance.

## **CLASS MATERIALS:**

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

## **CLASS ATTENDANCE:**

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes.

## **CLASS PARTICIPATION:**

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

## **CLASS RECORDINGS:**

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student

AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

**CLASSROOM CITIZENSHIP:**

All students are expected to conduct themselves appropriately in the course, including in the live lectures as well as in communication with the instructor and grader(s).

**OFF-CAMPUS INSTRUCTION AND COURSE ACTIVITIES:**

N / A

**COMET CREED:**

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

**ACADEMIC SUPPORT RESOURCES:**

The information contained in the following link lists the University’s academic support resources for all students.

Please see <http://go.utdallas.edu/academic-support-resources>.

**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 review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

*The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.*