

# CS249 DATA STRUCTURES & ALGORITHMS

## General Information:

- Department: Department of Computer Science
- College: College of Engineering and Natural Science
- Course: CS249 – Data Structures and Algorithms (3 credit hours)
- Semester: Spring 2007
- Time: 9:35am – 10:50am TuTh
- Location: Engineering 321
- Instructor: Dan Li (dan.li@nau.edu)
- Office: Engineering 255 (Phone: 3-1468)
- Office Hours: Mondays 9am – 12am; Thursdays 1pm – 3pm (or by appointment)
- Course Website: [http://www.cens.nau.edu/~dl259/teaching/cs249\\_spring2007/](http://www.cens.nau.edu/~dl259/teaching/cs249_spring2007/)

**Course Prerequisites:** CS136 (Basic fluency in Java)

**Course Descriptions:** Design, analysis, and implementation techniques of abstract data types such as arrays, lists, trees, heaps, and graphs.

**Course Objectives:** Successful completion of this course will provide a student with the necessary skills to design and implement efficient computer programs that utilize sophisticated algorithms and data structures to solve a variety of nontrivial problems.

**Course Structure/Approach:** This course presents material during lectures and through assigned reading and homework that are expected to be completed outside of class.

**Required Textbook:** Data Structures & Algorithms in Java (2<sup>nd</sup> edition), by R. Lafore.

**Course Outline:** The schedule is tentative and subject to change depending upon the progress of the class.

Week	Topic
1. (Jan 15- Jan 19)	Algorithm Analysis
2. (Jan 22- Jan 26)	List ADT
3. (Jan 29- Feb 2)	Stack, Queues, Priority Queues
4. (Feb 5- Feb 9)	Simple Sorting, Recursion
5. (Feb 12- Feb 16)	Recursion, <b>Midterm I</b>
6. (Feb 19- Feb 23)	Advanced Sorting
7. (Feb 26- Mar 2)	Advanced Sorting
8. (Mar 5- Mar 9)	Hashing
9. (Mar 12- Mar 16)	Trees
10. (Mar 19 – Mar 23)	Spring Break
11. (Mar 26 - Mar 30)	Special BST, <b>Midterm II</b>
12. (Apr 2 – Apr 6)	Special BST
13. (Apr 9 – Apr 13)	Huffman Code, Trie
14. (Apr 16 – Apr 20)	Heaps, Graphs

15. (Apr 23 – Apr 27)	Graphs, <b>Midterm III</b>
16. (Apr 30 – May 4)	Graphs
17. (May 7 – May 11)	<b>Final Exam</b>

### Assessment of Student Learning Outcomes:

- **Methods of Assessment:**

Assessing students' achievement of this course's learning outcomes is done using homework, in-class participation, and examinations.

**(1) Homework:** Homework will be collected and checked for both completion as well as content.

**(2) Examinations:** You will have to work efficiently to complete exams in the time allotted. The exams will be very similar to the homework problems, hence, if one does not do the homework the likelihood of successfully writing the examinations is greatly diminished.

**(3) In-class Participation:** In-class participation consists of answering questions, in-class assignments and quizzes and is used to assess what is being understood in a quick and timely manner.

- **Timeline for Assessment**

Homework is typically assigned bi-weekly throughout the semester. The mid-term exams will be given in week 5, week 11, and week 15. The final exam will be given during finals week.

### Grading System:

	<b>Numbers</b>	<b>Total Weight</b>
Assignments	6	30%
Midterm Exam	3	30%
Final Exam	1	20%
In-class Participation	N/A	20%

Grading: A=90%-100%, B=80%-89%, C=70%-79%, D=60%-69%, F<60%.

### Course Policies:

- **Makeup Tests**

There are NO make-up tests without prior consent of the instructor.

- **Attendance**

Attending class is MANDATORY; tardiness and unexcused absences are considered lack of in-class participation and will be reflected in your grade.

- **Homework Late Policy**

You are given THREE "late days" that can be used towards homework submissions during the semester. A late day is defined as exactly 24 hours, so if an assignment is due at 9:35AM on Tuesday, you could submit the assignment by 9:35AM on that Wednesday by using up one of your late days.

- **Plagiarism and Cheating**

One word: DON'T. Cheating on tests or assignments will result in an immediate failure in the course. Cheating is intentionally claiming credit for work or knowledge that is not your own. Cheating is also intentionally making it possible for others to claim credit for work or knowledge that is not their own. In the event of a cheating incident the student receives an F in the course and a formal record of the incident is put into the student's file.

Moreover, you'd be amazed how easy it is to detect plagiarism or cheating. Cheaters don't spend tremendous amounts of time masking their copy, because that defeats the purpose and it would be simpler to do the homework themselves. Invariably, therefore, they get caught.

**University Policies:**

- **Safe Working and Learning Environment**

<http://oak.ucc.nau.edu/dam1/Safe%20Policy.htm>

- **Students with Disabilities**

<http://www2.nau.edu/dss/>

- **Institutional Review Board**

<http://www4.nau.edu/ovp/irb/index.htm>

- **Academic Integrity Guidance**

<http://www.nau.edu/library/information/guides/plagiarism.html>