CS201 Data Structures and Algorithms – Spring 2020
Syllabus

Course Information

Course number:	CS201-001
Location:	North Lawn 2009 TR 9:00-10:45 (Lecture).
Websites:	Blackboard

Instructor

Name:	Dr. Brandon Dixon
Office location:	2108 Cyber Hall
Office hours:	8:00-9:00 TR, or after class, and by appointment
Phone:	(205) 348-0597
E-mail:	dixon@cs.ua.edu

Catalog Statement

CS 201 Data Structures and Algorithms:
Data structures including balanced search trees, heaps, hash tables, and graphs. Algorithm design techniques including divide-and-conquer, greedy method, and dynamic programming. Emphasis on problem solving, design, analysis, and reasoning about data structures and algorithms.

Prerequisites

CS 101 Minimum Grade of C- or CS 111 Minimum Grade of C- and
MATH 301 Minimum Grade of C- and
MATH 302 (Concurrent Enrollment Allowed) Minimum Grade of C-

Course Objectives

At the end of this class, a student should understand the concepts of:

- *algorithmic complexity*
- *data structures*
- *searching and sorting techniques*
- *algorithmic design*

Textbook

0-262-03384-4 Cormen, Liserson, Rivest and Stein, Introduction to Algorithms 3rd edition

We will take attendance using www.arkaive.com the enrollment code is: ZYQT

Material & Schedule

Week	Book Chapter	Topic	Exams
#0		*Course Introduction*	
#1	*Ch. 3*	*O Notation*	
#2	*Ch. 17*	*Dynamic Arrays and Amortized Analysis*	
#3	*Ch. 4*	*Divide and Conquer with recurrences*	
#4	*Ch. 8*	*Sorting in Linear Time*	Project Checkpoint 1
#5	*Ch. 9*	*Medians and Order Statistics*	Exam 1 (2/11)
#6	*Ch. 13*	*Balanced Search Trees : Red Black Trees,*	
#7	*Ch.18*	*2-3-4 Trees, Treaps, B-Trees*	
#8	*Ch. 21*	*Disjoint Sets*	
#9	*Ch. 15*	*Dynamic Programming*	Project Checkpoint 2
#10			Exam 2 (3/12)
#11	*Ch. 16*	*Greedy Algorithms*	
#12	*Ch 19*	*Fibonacci Heaps (Time Permitting)*	
#13	*Ch 20*	*Van Emde Boas Trees (Time Permitting)*	Exam 3 (4/16)
#14		*Project Presentations*	Project Final
Final Exam:		**8:00 – 10:30 Tuesday April 28**	

This calendar is subject to change as required by good instructional practice.
Any changes will be posted on Blackboard Learn.

Grading

Grades will be determined by the following percentages:

Percentage	Task
35%	Midterm Exams
20%	Final Exam
35%	Data Structures Library (Programming Project)
10%	Attendance

Programming Project Methodology

Your project this semester will be a data structures library. There will be checkpoints along the semester to make sure that you are on track and making progress. At the end of the semester, you will present your work in a question and answer style presentation along with executing various test cases for your code.

The goal of this project is for you to have a library that you have personally built that will be useful for you in the future. This should be a project for you to take pride in and strive to produce excellent code.

Course Policies

Exams: Exams will focus on the skills outlined in the course syllabus and will focus heavily from the material from the lectures, in class assignments, exercises from the textbook, and programming assignments.

Attendance: We will use the system at www.arkaive.com to take daily attendance. **Attendance is required.** Students are responsible for announcements on Blackboard Learn and in class. If you are not in class, it is your responsibility to get the notes and announcements from another student.

Grading: If you have questions regarding the grading of your assignments or exams, you MUST come to see the instructor WITHIN ONE WEEK after the date your assignments or exams have been returned to you.

Class Readings: Course material consists of both class lectures and textbook sections. All material presented in lecture and in the book will be represented on the exam.

Makeup policy: Make up credit for missed exams or projects will be given **only if** a doctor's note is presented for the exam or due date and the professor is notified before the exam. The grade on the final exam will be substituted for the missed exam.

UAct: The University of Alabama is committed to an ethical, inclusive community defined by respect and civility. The UAct website provides extensive information on how to report or obtain assistance with a variety of issues, including issues related to dating violence, domestic violence, stalking , sexual assault, sexual violence or other Title IX violations, illegal discrimination, harassment, child abuse or neglect, hazing, threat assessment, retaliation, and ethical violations or fraud.

Policy on Academic Misconduct: All students in attendance at The University of Alabama are expected to be honorable and to observe standards of conduct appropriate to a community of scholars. The University of Alabama expects from its students a higher standard of conduct than the minimum required to avoid discipline. At the beginning of each semester and on examinations and projects, the professor, department, or division may require that each student sign the following Academic Honor Pledge: "I promise or affirm that I will not at any time be involved with cheating, plagiarism, fabrication, or misrepresentation while enrolled as a student at The University of Alabama. I have read the Academic Honor Code, which explains disciplinary procedure resulting from the aforementioned. I understand that violation of this code will result in penalties as severe as indefinite suspension from the University."
See the Code of Student Conduct for more information.

Accommodations for Students with Disabilities:
To request disability accommodations, please contact the Office of Disability Services (348-4285). After initial arrangements are made with that office, contact the instructor.

This syllabus is subject to change as required by good instructional practice.
Any changes will be prominently posted on Blackboard Learn.