CS1332 Data Structures & Algorithms Spring 2019

Professor

Dr. Mary Hudachek-Buswell
Email: hudachek@cc.gatech.edu
Office: CCB 137
Office Hours: By appointment. I do not hold office hours the first or last week of the semester.

Teaching Assistants

Office hours are listed on the "TA Info / Help" page.

Timothy J. Aveni – Head TA: tja@gatech.edu
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Where to Find your TA:
- Help Desk or TA Office Hours will be held in the College of Computing – CCB 104A.
- Schedule of Help Desk hours will be posted on Canvas. You may see ***ANY*** CS1332 TA for help.

Course Information

Lectures and Final Exams:
Section A lecture is Monday/Wednesday/Friday in Clough 152 from 9:05 AM – 9:55 AM
Section A FE is Wednesday, May 1st, 8:00 AM – 10:50 AM

Section B lecture is Monday/Wednesday/Friday in Clough 152 from 10:10 AM – 11:00 AM
Section B FE is Friday, April 26th, 8:00 AM – 10:50 AM

Section C lecture is Monday/Wednesday/Friday in Howey L3 from 1:55 PM – 2:45 PM
Section C FE is Monday, April 29th, 2:40 PM – 5:30 PM

Prerequisite:
You must have a C or better in CS1331 to remain in this course. If you do not have this prerequisite you will be dropped.

Recommended Textbook:
Data Structures and Algorithms in Java. 6/edition by Goodrich, Tamassia, and Goldwasser 2014 ISBN: 9781118771334 (Kindle edition is fine. The 5th edition is probably also fine.)

Course Website/Resources/Communication:

- Canvas is the course management tool for the semester, http://canvas.gatech.edu/.
- Gatech email is the official communication tool between professors and students for this course. You must check for messages on a regular basis. All communication with your professor should be through the Canvas Email.
- Here is the Piazza link to CS1332 Spring 2019, Sp19Piazza
- Students are responsible for any and all announcements made during lecture or on Canvas.
- Java 8, Checkstyle 8.12, JUnit 4.12
- IDE is your choice, the TAs officially endorse IntelliJ as an IDE

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Course Objectives:

- Develop more skills in individual Java programming
- Work with common data structures used in software development by coding their low-level implementation
  - Arrays, ArrayLists,
  - LinkedLists (Singular, Doubly, Circular)
  - Stacks, Queues, Deques, Priority Queues
  - Various Trees: Binary, Binary Search, AVL, Splay, Heaps, 2-4 Trees, etc…
  - Hash Maps/Tables; External Chaining and Probing
  - Graphs and their algorithms
- Become familiar with common algorithms on these data structures
  - Sorting Algorithms: Bubble, Insertion, Selection, Cocktail Shaker, Merge, Quick, Radix etc...
  - Pattern Matching Algorithms: Brute force, Boyer-Moore, KMP, Rabin-Karp
  - Graph Algorithms: Dijkstra's Shortest Path and multiple MSTs
  - Dynamic Programming Algorithms
- Work with Big-O notation, allowing good choices about the appropriate data structure and algorithm to use for a particular programming problem
- Improve one's ability to test and debug programs

Lecture Attendance is required, Recitation Attendance is highly encouraged, and it is assumed you are attending. You are responsible for any and all announcements made during lecture whether you are present or not.

All students are required to attend the lecture that they are registered in for the duration of the semester. No switching sections will be allowed.

"Sitting in" is against GT Policy, and is explicitly not allowed. We do not violate Institute policy. You are not allowed to attend without being registered. Problems with this will be turned over to the Dean of Students and/or GT Police.

Conduct Policy:
It is expected that everyone will follow the Student-Faculty Expectations document, and the Student Code of Conduct. The professor expects a positive, respectful, and engaged academic environment inside the classroom, outside the classroom, in all electronic communications, on all file submissions, and on any document submitted throughout the duration of the course. No inappropriate language is to be used, and any assignment, deemed by the professor, to contain inappropriate or offensive language will get a zero. You are to use professionalism in your work. Violations of this conduct policy will be turned over to the Office of Student Integrity for misconduct.

Assessments and Grade Thresholds:

- There will be homeworks every week and exams are roughly 4 weeks apart. Expect for a homework to be due during the last full week of class of the semester.
- There are NO “dropped” exams or homeworks.
- There is NO curve in this course. Letter grade cutoffs use a straight scale.
- The final exam is mandatory.
- In addition to having a passing average, you must have a passing exam average (all exams and the final are averaged together, unweighted) to pass this class. Passing is hereby defined as 70% or higher.
- There is a Participation grade for this course. Students will have "Reality Checks" on topics every week that will be turned in during lecture. Feedback will be given to students who complete the work.

Type Assessment	Points	Grade Scale	Percentage
Participation	4%	A	90.0%
Homework/Programming	16%	B	80.0%
Exams (3)	60%	C	70.0%
Final Exam	20%	D	60.0%
Total	100%	F	less than 60.0%

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No – Makeups/Exceptions:

- There are no makeups for missed exams or homeworks or reality checks. Institute approved absences are rare and do qualify for an exception.
- Please minimize absences to attend the Georgia Tech All Majors Career Fair. Exam 1 will still take place on February 6 because there is no conflict with any of the career fairs.. Additionally, for any absences due to interviews, you must provide documentation from the employer on letterhead with the exact interview/travel dates. In order to be excused for attendance at a career fair, you must send an email to the professor prior to the event with the exact day and time. An excuse for career fair attendance will only cover Reality Checks, not homework.
- If you are absent due to official Georgia Tech business, please forward the electronic official documentation to the professor in an email stating the dates you will be absent. It will be noted in the gradebook.
- *Events such as vacations, weddings, graduations, errands, work conflicts, sleeping through your alarm, alarm malfunction, forgetting to submit, forgetting the date or time of an exam, not being aware of the assignment are all not valid excuses.*
- If you miss any assignment without a valid excuse, then you receive a 0.

- If you will be observing religious holidays during the semester, then inform your professor the first week of the semester in writing, especially of any conflicts with exam dates.
- Any request for exceptions to the no-makeup policy must be made in advance of the assessment unless that is impossible.
- *Documented* incapacitating illness, death in the family, judicial procedures, military service, or official school functions are considered valid excuses. Be aware that ***documentation*** must be provided on letterhead with the signature of a physician, supervisor, or other appropriate official. Additionally, the excuse must be encompass the date(s) of any assignment for which you are requesting an exception. All situations will be referred to the Dean of Students Office for verification. Therefore, contact the Dean of Students with your documentation, and they will inform you of the proper procedures.https://studentlife.gatech.edu/ The Dean of Students Office, then contacts your professor directly with any accommodations to be provided.
- The final decision regarding any exception is made solely at the discretion of your professor.
- We will only offer a *single* makeup day for each exam. We write a brand new exam for makeups so that the integrity of the exams remains intact. The exam makeup day takes place one week later on a Thursday (when classes are in session) from 11 to noon in the TA helpdesk lab. If you have an excused absence, then you may take the makeup exam at this time. If you miss the makeup day, then you must have another institute approved absence in order for us to consider alternative dates. If you miss the makeup day without a valid excuse, then you receive a 0.

Grade Disputes/Regrades:

- We will be using Gradescope this term, which allows us to provide fast and accurate feedback on your work. Exam grades will be returned through Gradescope. Your Gradescope login is your university email, and your password can be changed here. When the first assignment is released, you will receive an email to set your password for the first time. As soon as grades are posted, you will be notified immediately so that you can log in and see your feedback.
- If you feel that a regrade request is justified, visit the Help Desk with your laptop and discuss the dispute with any TA. The TA will give you instructions on how to submit your regrade request.
- Grade disputes are rare, but if you find yourself not clear about why points were lost, we have a strict policy and procedure to follow. Disputes of grading on assignments, exams, etc. must be discussed within 7 days of the assignment being returned. Any exceptions to this timeline will be announced before grades are released. All regrade requests go through the Head TA. Should you find yourself having an issue with a grade, contact the Head TA. No regrade requests submitted after the deadline or without approval from a TA will be considered.
- If the Head TA is unable to resolve the issue, contact your instructor.
- Every regrade request must have a detailed reason why a regrade is needed. “I'd like to get more points" is not a valid reason and will result in the request being promptly declined. Furthermore, any regrade request that is not respectful and professional will be declined. Be aware that any regrade request may result in your entire exam or homework being regraded. Your grade may go up or down.
- It is your responsibility to ensure that all the grades in Canvas are correct ***before finals week***. After that, the only grade discussion will be about the grading of your final exam. Any discussion of your grades after the final exam must be done in person, and ***cannot occur until the 3rd week*** of the next semester you are in school. Final exams are not released or returned to students. They remain on file for the college.

Academic Honesty:
Every Student is expected to read, understand and abide by the Georgia Tech Academic Honor Code. http://www.honor.gatech.edu/

- File sharing is expressly forbidden. Do not give your code to another student, nor take code from another student. Both activities are academic misconduct and forms of cheating.

- Proper collaboration means talking through problems, assisting each other with de-bugging, explaining a concept, etc… Diagramming and high-level discussions are acceptable forms of collaboration.
- You may only use pseudocode provided in the course materials. This means, you are NOT allowed to use pseudocode from the internet, or from your peers.
- You are not allowed to simply exchange code or write code for others. This still applies even if you make trivial changes such as variable names, comments, styling, etc...
- The only code you are allowed to share is JUnits on a pinned post on Piazza. Use JUnits from other students at your own risk. We will not be endorsing them. See assignments for more details. If you share JUnits, they must be shared on a site that we specify and not in random locations like Facebook, your GitHub account, etc...

Violators of the collaboration policy for this course will be turned into the Office of Student Integrity.

Homework Submission & Responsibility:
All course information and resources can be found in Canvas http://canvas.gatech.edu/ to include: Syllabus, Assignments, Submissions, Announcements, Grades & Feedback, Resources, ….

- All homework for all sections will have a single due date. Homework due dates may differ depending on the length of the assignment. Homework is always due at 11:55:00 pm for full credit consideration. There is a grace period until 2:00:00 am the following day, but your submission will be marked as late by Canvas, and you will be penalized *25 percentage points* for the assignment. *Do not ask for an exception to the late policy unless you have a valid excuse accompanied by documentation that has been submitted to the Dean of Students office.*
- Homework turn-in is via Canvas. Turning in homework properly on Canvas is solely your responsibility. That last statement bears repeating.
- Canvas is NOT forgiving about due dates and times. Imagine a train taking off whether or not you are fully onboard. It has no love.

Turning in homework properly on Canvas is solely your responsibility.

Canvas submissions:
It is completely within your power to make sure your homework is submitted properly. If you are not conscientious about your submission, then there is a high likelihood you will trip up and not turn in one or more assignments correctly.

  - You are to upload the .java files and any other files required by the assignment. .class files will not be graded and will be given a 0. To receive credit, the file(s) must compile in Java 8 using only JUnit 4.12 and the Java standard libraries.
  - After submitting your file(s) for a HW, reload Canvas going to the Assignments link within the CS1332 tab. Look at the assignment in question. You should now see that it says it has been submitted with the date and time.
  - Download a fresh copy of the files from Canvas, saving to a new folder, and then recompile and run that code. Following steps 1, and 2 is truly the only way to confirm what you have turned in.
- Failure to upload the proper file(s) for a homework will result in a zero for the assignment. Programs that do not compile or run also receive no credit.

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Exam Instructions:

If you arrive to an exam more than *15 minutes* late, we will refuse entry. You must bring your GTID to every exam so it can be scanned. You are to attend your section's exam, not another one. If you attend a different section's exam, then you will receive an automatic zero on the exam.

- Signing and/or taking the exam signifies you are aware of and in accordance with the Academic Honor Code of Georgia Tech and the Georgia Tech Code of Conduct.
- Special seating assignments may be required at the start of the exam.
- Notes, books, calculators, phones, laptops, smart watches, headphones, etc. are NOT allowed.
- Under NO circumstances are you allowed to leave the exam room until you have turned in the exam.
- Extra paper is NOT allowed. If you have exhausted all space on this test, talk with your professor.
- Pens/pencils and erasers are allowed. Do not share.
- All code must be in Java.
- Efficiency matters. For example, if you code something that uses O(n) time or worse when there is an obvious way to do it in O(1) time, your solution may lose credit. If your code traverses the data 5 times when once would be sufficient, then this also is considered poor efficiency even though both are O(n).
- Style standards such as (but not limited to) use of good variable names and proper indentation is always required. (Don't fret too much if your paper gets messy, use arrows or whatever it takes to make your answer clear when necessary.)
- Comments are not required unless a question explicitly asks for them.

Final Exam Instructions (in addition to all the above instructions):

According to Institute rules, three exams in one day constitutes a Class Two conflict. Per those guidelines, http://www.catalog.gatech.edu/rules/12/ , you are expected to notify your instructor and make alternative arrangements two weeks before the beginning of exam week, before April 8th. This notification window is essential, because faculty members have a very busy time during finals week, and alternate exam periods are not always easy to arrange at the last minute. Additionally, per the posted regulations, when there is a Class Two conflict, it is always the middle exam period that is deemed to be in conflict, and the instructor of that course should be contacted with regard to alternative arrangements.

Important Dates (all dates are tentative and subject to change):

First Lecture Day	January 7, 2019
First Recitation Day	January 15, 2019
Holiday (No class)	January 21, 2019
Exam 1	February 6, 2019

Exam 2	March 6, 2019
Withdraw Deadline	March 13, 2019 (4pm)
Spring Break (No Class)	March 18-22, 2019
Exam 3	April 10, 2019
Last Lecture Day	April 22, 2019
Last Recitation Day	April 23, 2019
Final Section A	May 1, 2019, 8:00am - 10:50am*
Final Section B	April 26, 2019, 8:00am - 10:50am*
Final Section C	April 29, 2019, 2018, 2:40pm - 5:30pm

*Since Section A & B are at 8:00 am there will be no rescheduling. Contact your other Professors of the second exam for rescheduling.

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Created by Adrianna Brown