CSCI 1570 - Algorithms and Data Structures
Course Information and Syllabus
Semester I, 2022-2023

Instructor	Lorenzo De Stefani (lorenzo_destefani at brown.edu)
Course description	This is a core undergraduate Computer Science course on foundations of algorithmic theory and applications. The questions it aims to answer are: (1) What are the different algorithmic archetypes? (2) How can we analyze the performance of algorithms? (3) Which design guidelines should be followed towards achieving efficient algorithms? (4) What data structures can be used for specific algorithmic tasks? We will cover these questions and, in the process, explore the use of algorithms in important applications such as artificial intelligence, data management, network analysis, and geographic information systems. The course has lectures, written homework assignments, and exams.
Topics	1. Methodologies for algorithms analysis 2. Data structures 3. Sorting and searching 4. Greedy algorithms 5. Dynamic programming 6. Divide & conquer 7. Graph algorithms 8. Text analysis and pattern matching 9. Geometric algorithms 10. Algorithms for external memory 11. Online algorithms
Prerequisites	CSCI 0160, CSCI 0180, or CSCI 0190, and one of CSCI 0220, CSCI 1010, CSCI 1450, MATH 0750, MATH 1010, MATH 1530.
Lectures	Tuesdays and Thursdays. Time: 2:30-3:50 pm. Room CIT 368 The course is offered **in person**. Attendance will be collected during class and will count towards the final score in the course. Recordings of the lectures will be published within **48 hrs after the class on Panopto**.
Course Website	For more in-depth information about the course, refer to the Course website http://cs.brown.edu/courses/csci1570/
Enrolling in courses with overlapping meeting times	Petitions to enroll into CSCI 1570 with overlap with other courses will not be approved.

Lecture Slides	Lecture slides will be available on the Ed platform
Text	M. T. Goodrich, R. Tamassia - Algorithms Design and Applications, Wiley, 2014, ISBN: 978-1-118-33591-8 https://www.wiley.com/en-us/Algorithm+Design+and+Applications-p-9781118335918 https://www.amazon.com/Algorithm-Design-Applications-Michael-Goodrich/dp/1118335910
Professor's Office Hours	Thu, 16:00-17:40 ET. Meeting must be scheduled no later than 15:00 ET of the same day using this link.
Head TAs	Robert Scheidegger (robert_scheidegger@brown.edu)
UTAs	http://cs.brown.edu/courses/csci1570/#staff
TA Office Hours	http://cs.brown.edu/courses/csci1570/#hours
Time Requirements	Each week, in addition to 2 hours 40 minutes in class (for a total of 24 classes), students will spend on average as much time on reading the material, 7 hours on the ten homework assignments. There will be two in-class Midterms, each lasting 2.5 hours. Preparation for each midterm should take 12 hours. Per Brown University policy, wwsw4-credit courses should require a minimum of 180 total hours of work throughout the semester. The above estimates satisfy this: 24 lectures will yield 40 hours of class time. As much time will be spent reading material. Ten homework assignments will require roughly 70 additional hours outside of class time. Two midterm exams will yield at least 30 hours.
Course credit and Grading	**Course Credit** ● Homework 55% (The lowest homework score will be discarded) ● Midterm 1 15% ● Midterm 2 20% ● Attendance 10% **Grading:** Please be aware that undergraduate TAs will be scoring your work. The final responsibility for all grades lies with the instructor, Lorenzo De Stefani. **Regrade requests** on assignments (except Midterm 2) will be enabled via Gradescope **for a week after the grades are released, and disabled past that**. Regrade requests for Midterm 2 will be available for three days after the grades are released. on your assignment **only after using the regrade request process**.

	Final Grade cutoffs: The cutoffs for an A/B/C grade are set to 90%/80%/70% of the available credit, including homework assignments and in-class midterms. Such thresholds may only be adjusted down to Lorenzo's discretion. To receive an "S with distinction," students need to complete the class with a score well within the "A" range (i.e., > 92%).
Homework policy	The schedule of homework releases and due dates is presented in the official class calendar. Homework assignments will be released on the same page. Any modifications will be communicated by the instructor, and such modifications will be reflected in the calendar. **Gradescope policy:** Homework assignments must be submitted using Gradescope. When registering, we encourage you to use your @brown.edu email account. If you decide to use an anonymous email account, it is mandatory to complete the disambiguation form available on the course website. Only the instructor will have access to this form. As the completion of the disambiguation form is **necessary** to compute your results at the end of the semester, failure to do so may result in the inability to receive the final grade in a timely fashion. **LaTeX:** Homework assignments **must be typeset** (LaTeX is strongly preferred as it facilitates the formatting of math formulas and pseudocode) and submitted as PDF documents using GradeScope. Help with LaTeX and GradeScope will be provided. **Collaboration policy:** We allow (and encourage!) discussion of the material presented in lectures, help sessions, and the textbook, as well as discussion of concepts involved in homework assignments. Written work is another matter. **You must write up your homework solutions by yourself**. This ensures that you understand the material even if you collaborated on the problem. You should not take notes away from collaboration sessions and should be by yourself when writing the solution. Please list any homework collaborators on your submission. Rule of thumb: **If you cannot independently reproduce what you hand in, don't hand it in**. We reserve the right to request that you explain your solution to a problem, so we can ensure that the solution was your own work. Violations of such policy will result in a **zero score** on the involved homework assignment, and repeated offenses will result in the inability to complete the class. Particularly egregious violations will incur the repercussions discussed in the Academic Code of Conduct.

	Late submission policy: At most two homework assignments can be handed in at most one day late. Additional late-day passes may be granted by Lorenzo in consideration of extenuating circumstances (e.g., illness). Those requests **must be accompanied by a Dean's Note** and sent directly to Lorenzo. While we sympathize with other possible occurrences, **extensions will not be given for random special events** (e.g., I/my roommate/pet spilled water on my laptop, I lost my laptop/power adapter). You are free to update your submission up to the deadline date (or past it if you use late days), we recommend doing so to avoid losing potential partial credit, and/or keep a version of your work backed up online. **Double-check your work before submitting it.** Submitting blank pages and/or forgetting to upload materials or uploading the wrong version of an assignment will not be granted "special" late deadlines.
Midterms Policy	Midterm 1 and 2 (a.k.a. the final), will be in-class assignments. Dates and locations will be announced in the first two weeks of the semester. Students will have 2.5 hours to complete these assignments. While the use of the book is allowed, no electronic devices may be used. No collaboration is allowed for Midterm 1 and Midterm 2. You should not discuss the problems and your solutions with other students. Violations of such policy will result in a **zero score** on the involved midterm, and repeated offenses will result in the inability to complete the class. Particularly egregious violations will incur the repercussions discussed in the [Academic Code of Conduct](#).
Auditing	**Lecture attendance:** Attending all of the planned lectures is required. To check-in please talk with Lorenzo at the end of the class. **Homework:** Auditors must complete at least one homework assignment for each half of the semester. These must be completed within the assignment deadline, and the score must be at least 80%.
Subscribing to class rules	At the beginning of the course, all students are required to formally indicate to understand and agree to abide by the course collaboration policy by downloading the PDF of the syllabus, signing it in the predisposed place at the bottom, and submitting it on Gradescope. **Failure to do so in a timely fashion will not allow students to complete the class**.

Diversity: All are Welcome	The course intends to provide a welcoming environment for all students. We especially welcome diverse ideas and perspectives during class discussions. All members of the CS community, including faculty and staff, are expected to treat one another in a professional manner. Toward this goal, TAs have undergone training in diversity and inclusion. However, despite our best efforts, we may accidentally slip up, so please feel free to speak to any member of the course staff with any concerns you have during the semester and do not hesitate to contact Lorenzo directly. We will take your concerns very seriously.
More Information	For more in-depth information about the course, refer to the Course website http://cs.brown.edu/courses/csci1570/
Accommodations	If you feel you have physical, psychological, or learning disabilities that could affect your performance in the course, we urge you to contact SEAS (https://www.brown.edu/campus-life/support/accessibility-services/). We will do whatever we can to support accommodations recommended by SEAS. If you require SEAS accommodations, please let Lorenzo know **at the beginning of the semester**.
Mental Health	Being a student can be very stressful. If you feel you are under too much pressure or there are psychological issues that are keeping you from performing well at Brown, we encourage you to contact Brown's Counseling and Psychological Services (CAPS: https://www.brown.edu/campus-life/support/counseling-and-psychological-services/). They provide confidential counseling.
Coping with Unforeseen Events	If there are events that are upsetting to you, whether political, family-related, weather-related, etc., that affect your ability to do well in class, we are happy to take them into account with respect to our late and incomplete policies. Please feel free to talk to Lorenzo De Stefani about this.

I understand and subscribe to the rules and policies for the Fall'22 edition of CSCI 1570.

Name:

Brown Email address:

Banner ID: