

Design and Analysis of Algorithms CS161
Website: <https://panageas.github.io/algo2026.html>

Instructor: Ioannis Panageas, email: ipanagea@ics.uci.edu

Office Hours: Wednesday 2:00-4:00pm via zoom.

Email for questions related to discussions: Rohan Chauhan, email: rmchauha@uci.edu

Office Hours: TBA.

Email for regrading requests: Nikolas Patris, email: npatris@uci.edu

Office Hours: TBA via zoom.

Email for any other requests: Jingming Yan, Email: jingmy1@uci.edu

Office Hours: TBA.

Remark: Office hours will be starting week 2; Zoom links will be posted on Edstem.

Required Textbook*: Algorithm Design and Applications, by M. T. Goodrich and R. Tamassia.

Recommended Textbook: Introduction to Algorithms,
by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein.

*The book is available in hard copy from the usual sources. It is also available online at a much cheaper rate.

Edstem: <https://edstem.org/us/courses/90397/discussion>

Edstem is intended as an open and respectful forum for the exchange of questions and answers about the class and the course material. Inappropriate, insulting, or offensive posts will not be tolerated. Such posts will be deleted, and may result in the suspension or termination of access to the forum. In extreme cases, offensive posts may be referred to other University entities for appropriate disciplinary action.

Grading Policy:

- **4 Homeworks (4%):** Four homeworks will be given. Each student has to work individually. The assignments will be posted on Gradescope and students need to submit their solutions in PDF format on Gradescope. See <https://help.gradescope.com/article/0chl25eed3-student-scan-mobile-device> for help on scanning. See also schedule when homeworks are due. The TA will grade only one question per homework, chosen at random. Note that HWs are worth only 4%, are meant for practice.
- **3 Midterm Exams (23+23+23 = 69%):** Will be given on Tuesday of Weeks 4, 6 and 9. Please note all exams will be held synchronously in class hours. 1 hour will be permitted, the rest of time will be allocated for administrative duties.
- **Final Exam (30%)**

- **Total:** 103 points (3 points are extra credit).

Remark: If you get ≥ 21 points in **all three** midterms, you get A in the class and you do not need to take the final. If your grade out of 100 in the final is better than the total sum (of the three midterms and the final), then your grade will be based on the grade of the final.

Missed Exam Policy: If you need to miss an exam, for any reason, and this is for reasons the instructor accepts, then the points of the missing exam will be allocated equally among the other components. For reasons the student could have known about in advance, it is expected that the student contacts the instructor as soon as possible after the conflict is known. If the conflict could have been known before the exam, the instructor will not provide any relief if informed after the exam unless it would have been unreasonable to do so prior to the exam. If you need to miss an exam, or if you do miss an exam, you must email the instructor as soon as possible upon knowing this. There will be no make up exam. The class has roughly 200 students, so it is impossible to provide individual accommodations.

Discussions and switching: Attending discussions is not required, it is recommended though. Please attend the discussion section you are enrolled and do not attend different time sections.

Schedule of classes (tentative):

Week	Topic	Deadlines
1	Introduction, course expectations and syllabus. Review of basic data structures. Binary search. Sorting: introduction, comparison-based sorting. Insertion sort. Selection sort.	
2	Divide and Conquer recurrence equations. The simplified method. The master method. Divide and conquer algorithms: binary search, mergesort and quicksort; integer multiplication; matrix multiplication and Strassen's algorithm; counting line intersections, counting inversions	Homework 1 due Friday 16th of January
3	Divide and Conquer recurrence equations. The simplified method. The master method. Divide and conquer algorithms: binary search, mergesort and quicksort; integer multiplication; matrix multiplication and Strassen's algorithm; counting line intersections, counting inversions	Homework 2 due Friday 23rd of January
4	Dynamic Programming: Introduction. The Weighted Interval Scheduling Problem. The Truck Loading and 0/1 Knapsack problems. Longest Common Subsequence. Optimal matrix chain multiplication. Bellman-Ford and Floyd-Warshall Algorithms	Midterm 1 on Tuesday 27th of January
5	Dynamic Programming: Introduction. The Weighted Interval Scheduling Problem. The Truck Loading and 0/1 Knapsack problems. Longest Common Subsequence. Optimal matrix chain multiplication. Bellman-Ford and Floyd-Warshall Algorithms	Homework 3 due Friday 6th of February
6	Greedy Algorithms: Introduction. Fractional knapsack problem. Task scheduling. Graphs: basic concepts.	Midterm 2 on Tuesday 10th of February
7	Weighted graphs. Shortest paths, Dijkstra's algorithm. Minimum spanning trees, the Prim algorithm, Kruskal's algorithm.	
8	Max-flow Min-cut, bipartite matching	Homework 4 due Friday 27th of February
9	NP-complete problems. Reductions.	Midterm 3 on Tuesday 3rd of March
10	Recap	

Academic Dishonesty: Academic dishonesty (cheating) is a serious offense in the eyes of the instructor, the instructional assistants, ICS, and the university. Incidents of academic dishonesty will usually result in your receiving a grade of F in the course and not being allowed to drop the course. Additional consequences may occur at the academic unit or campus level. Examples of academic dishonesty include, but are not limited to:

- Copying from others during an examination
- Using unauthorized materials during an examination.
- Sharing answers or allowing another student to copy off your work during an examination.
- Tampering with an examination after it has been corrected, then returning it for more credit.
- Intentionally disrupting the educational process in any way.

For more complete information about academic honesty policies and procedures, consult the following resources:

1. <https://www.ics.uci.edu/ugrad/policies/index.php?policy=cheating>
2. <https://aisc.uci.edu/students/academic-integrity/index.php>
3. <https://aisc.uci.edu/policies/academic-integrity/AcademicIntegrityPolicyApproved-04.23.15.pdf>