

SYLLABUS

Old Dominion University • College of Sciences • Department of Computer Science

CS 600 • Algorithms and Data Structures • Fall 2026

Instructor Dr. Andrey Chernikov

- Email: achernik@odu.edu, please include “CS600” in the subject line.
- Office location: ECS 3311A, phone: 757-683-7732.
- Office hours: MW 2:00pm – 4:00pm. Zoom link: <https://odu.zoom.us/my/chernikov>.
- Send email for appointments outside office hours.

Mode of delivery

Scheduled in-class meetings, Mondays & Wednesdays 4:30pm – 5:45pm, Monarch Hall 2111.

Catalog description This course covers the following topics: (i) Basic introduction to algorithms, their design and analysis (ii) Asymptotic notation (iii) Recurrence Relations and their solutions (iv) Sorting and Order Statistics: various algorithms for sorting and their analysis, lower bounds for sorting, computing medians, modes and various order statistics (v) Paradigms for algorithm design and analysis: Dynamic Programming, Greedy Method, Amortized Analysis, and (vi) Graphs and Elementary Graph Algorithms: Breadth-first and Depth-first Search, Topological Sort, Minimum Spanning Trees and Shortest Paths Algorithms.

Prerequisites CS 361 or equivalent and CS 381 or equivalent

Course Objectives Students completing this course should be able to develop efficient solutions to basic computational problems via

- understanding the existing algorithmic approaches and data structures, their pros and cons,
- analyzing the computational costs of the existing approaches with respect to the given problem, and
- selecting and customizing an appropriate solution technique.

Outline

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| • The Role of Algorithms in Computing, Getting Started | • Binary Search Trees |
| • Characterizing Running Times | • Dynamic Programming |
| • Divide-and-Conquer | • Greedy Algorithms |
| • Probabilistic Analysis and Randomized Algorithms | • Amortized Analysis |
| • Sorting in Linear Time | • Elementary Graph Algorithms |
| • Medians and Order Statistics | • Minimum Spanning Trees |
| • Elementary Data Structures and Hash Tables | • Parallel Algorithms |

Required textbook Introduction to Algorithms (4th edition) by Cormen et al., MIT Press, 2022

Attendance policy

- Class attendance is not factored into the grade. Participation in class meetings is strongly encouraged as they provide a dedicated environment for staying focused and asking questions.
- **Extended absences** Reasonable accommodations, at the discretion of the instructor, will be provided to students who encountered extended roadblocks, or absences, to making progress that have been verified by the Student Outreach & Support (SOS) office. The definitions of recognized events that cause extended absences, as well as required documentation can be found at <https://www.odu.edu/life/dean-students/student-outreach#tab134=1&done1612907281342>. The request for an absence notification must be filed within five business days of the event.
- **Short absences** Disruptive life events that are not recognized as extended absences by the SOS office will not be considered valid excuses for missed deadlines. In order to minimize the impact of such events it is strongly advised to submit all assignments well before their deadlines. A one-time blanket excuse, however,

is automatically granted to every student that consists in disregarding their lowest quiz score (which could be a zero due to a missed deadline).

Disability Students are encouraged to self-disclose disabilities that have been verified by the Office of Educational Accessibility by providing Accommodation Letters to their instructors early in the semester in order to start receiving accommodations. Accommodations will not be made until the Accommodation Letters are provided to instructors each semester.

Assignments

- 80% of the overall grade is allocated to all quizzes, posted weekly on Mondays and open until 11:59pm on the following Monday.
- 20% is allocated to the final exam which will be open online on Wednesday, December 9th, from 9:00am to 11:59pm (expected to take two to three hours to complete).

Grades The final percentage score will be computed as follows:

$$\text{final score} = \frac{\text{individual total quiz score} - x}{\text{maximum total quiz score} - y} \times 80 + \frac{\text{individual final exam score}}{\text{maximum final exam score}} \times 20,$$

where x is student's lowest quiz score, and y is the number of points allocated for it. The letter grade will be looked up from the following table.

final score:	0	60	65	70	75	80	85	90	95	100
letter grade:	F	C-	C	C+	B-	B	B+	A-	A	

Submission rules

- All assignments will be published and submitted through the Canvas system. No other medium will be accepted without prior instructor's permission.
- Late assignments will not be accepted. Make-up assignments may be allowed only if student's extended absence has been verified by the SOS office. The final exam can be taken outside the scheduled interval only with the permission from the dean's office.
- An interruption in the Canvas accessibility will not be recognized as a reason for deadline extension, unless accompanied by a note from the university ITS department.
- Weekly quizzes will have week-long intervals for submission. Once the interval expires, the quiz will close automatically.
- For file-upload questions only typed answers will be accepted. No handwritten (and then scanned) solutions can be uploaded. ODU offers the essential software, e.g., Microsoft Office, for the students that can be downloaded or used in the computer labs. The portable document format (pdf) is preferred.
- The writing must be clear and concise. Points will be taken off for unnecessarily wordy or incomprehensible solutions.

Academic integrity

- All assignments must be completed individually. No person or artificial intelligence, except the instructor and the teaching assistant, can be asked for help with solving the assignments.
- Any electronic or printed texts can be consulted as needed. However, all sources (except the textbook) used in the graded work must be properly cited. The material in the textbook, however, is sufficient for solving all quiz and exam questions.
- Students are cautioned against replicating problem solutions found on the internet, as they are sometimes incorrect and often poorly written. The instructor may question the student to determine if submitted work corresponds to student's proficiency and assign the grade accordingly.
- Students must be familiar with and abide by the University Honor Code:
<https://www.odu.edu/about/monarchcitizenship/student-conduct/code>.