

CS 3510: Algorithms

Spring 2024 Syllabus

Course Description

Required of students pursuing a Computer Science degree or emphasis. Covers the analysis and design of algorithms and data structures, including graphs, greedy algorithms, divide and conquer algorithms, and dynamic programming.

Prerequisites

CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher); AND CS 3310 (Grade C- or higher)

Course fees

Course fee: \$20, used to assist in maintaining department infrastructure.

Disability Statement

If you suspect or are aware that you have a disability that may affect your success in the course you are strongly encouraged to contact the Disability Resource Center (DRC) located in the North Plaza Building. The disability will be evaluated and eligible students will receive assistance in obtaining reasonable accommodations. Phone # 435-652-7516.

Sections

1. MWF 9:00-9:50 am in Smith 116

CRN: 20173

Final exam May 1 at 9:00 am - 10:50 am

Instructor

Instructor: [Curtis Larsen](#)

Email: curtis.larsen@utahtech.edu

Phone: 435-652-7972

Office: North Burns 233

Office Hours:

Office hours are a fantastic opportunity to receive personalized assistance with any questions or concerns you may have about course concepts, assignments, or anything else on your mind.

I'm here to support you throughout the week with regular office hours. No need to worry about telling me in advance to use the scheduled office hours, just drop by whenever it suits you! Whether you prefer a face-to-face chat in my office at North Burns 233 or joining me virtually via Zoom, the choice is yours. You can find the Zoom link conveniently posted in an announcement on Canvas.

For the Fall 2024 semester, I'll be available during the following times:

- Mondays 1:00 pm - 2:00 pm
- Tuesdays 11:00 am - 12:00 pm
- Wednesdays 2:30 pm - 3:30 pm
- Thursdays 1:00 pm - 2:00 pm
- Fridays 11:00 am - 12:00 pm

If these times don't fit your schedule, don't hesitate to reach out to me. Simply shoot me an email or a message through Canvas, and we can find a time that works better for you. When you message me, suggesting a few alternative times would be incredibly helpful.

Looking forward to connecting with you during office hours!

Objectives

The student will be able to discuss the principles of:

- analysis of algorithms,
- divide-and-conquer algorithms,
- graph algorithms,
- dynamic programming, and
- linear programming.

The student will be able to:

- analyze algorithm run time,
- find and solve recurrence relations,
- create and analyze divide-and-conquer, graph, dynamic programming and linear programming algorithms,
- choose suitable algorithms for problems.

Resources

Texts

There is one required text for the course. It is available from the campus bookstore. Additionally, there is a recommended text book for reference. It is not available in the campus bookstore.

1. *Algorithms* by Dasgupta, Papadimitriou and Vazirani, [ISBN: 978-0-07-352340-8](#) (required)

This book is required and is the primary text for the course.

2. *Introduction to Algorithms, Third Edition* by Cormen, Leiserson, Rivest, and Stein [ISBN: 978-0262033848](#) (recommended)

Computer Labs

You may use departmental computers and software in the Smith Computer Center. Some lab assistants may be able to help with assignments and pass off homework assignments for introductory courses.

Course Web Site

Assignment submissions and grades will be managed in the [Canvas System](#).

Assignments and Exams

Reading

The student is responsible for reading the material in the textbook. A reading schedule is provided with the class schedule on the course website. The student is expected to read the material before the class in which it is discussed. The book also includes material beyond what we will discuss in lecture, which you are encouraged to study on your own. Feel free to bring questions from the reading to lectures or to office hours.

Assignments

A series of problem sets will be assigned. The number of points awarded per problem set may vary depending on the number and difficulty of the problems. The homework will consist of written problems, computer programming, and efficiency analysis. The assignments are designed to promote the course objectives listed above.

Written problems must be submitted via Canvas by the due date and time. PDF format is accepted. Program source code and analysis reports will be submitted via Canvas by the due date and time.

There will be homework due 3 times a week.

Exams

There will be three exams during the semester and one final exam as scheduled during finals week. The exams will be scheduled in the testing center to allow 110 minutes. The final will require the full 110

minutes scheduled for the exam time. The exam topics will be from the recently covered materials. The final exam topics will be comprehensive.

Grading

Your assignment group score will be a floating point number between 0 and 1, found by adding up the number of assignment points obtained, and dividing by the number of possible assignment points.

The three examinations during the semester are worth 100 points each. The final examination is worth 200 points. Your total examination group score will be a floating point number between 0 and 1, found by adding up the number of examination points obtained, and dividing by the number of possible examination points.

Your course score will be a floating number between 0 and 1, found by multiplying your assignment group score and your examination group score.

Your course letter grade will be assigned based on treating your course score as a percentage and looking up the grade in the table below.

Minimum Percentage	Letter Grade	Minimum Percentage	Letter Grade	Minimum Percentage	Letter Grade	Minimum Percentage	Letter Grade
94	A	84	B	74	C	64	D
90	A-	80	B-	70	C-	60	D-
87	B+	77	C+	67	D+	0	F

Course Policies

Attendance

Students are responsible for material covered and announcements made in class. School-related absences may be made up only if prior arrangements are made. The class schedule presented is approximate. The instructor reserves the right to modify the schedule according to class needs. Changes will be announced in class and posted to the website. Exams and quizzes cannot be made up unless arrangements are made *prior* to the scheduled time.

Occasional absences are acceptable as long as the student keeps up with assignment work. Students who miss more than two consecutive weeks of class or who miss more than 20% of scheduled classes during the semester without making prior arrangements will receive a failing grade. Students who miss any scheduled exam (including midterm exams and the final exam) or fail to complete a final project without making prior arrangements will receive a failing grade.

Time Commitment

Courses should require about 45 hours of work per credit hour of class. This class will require about 135 hours of work on the part of the student to achieve a passing grade, which is approximately 9 hours per week. If you do not have the time to spend on this course, you should probably rethink your schedule.

Late Policy

Assignments are due on the date specified in the schedule. Handing them in or passing them off after the specified time is considered one day late. You may turn them in up to two school days late with penalties as described below. After two days late, you receive zero points.

For example: if an assignment is due at noon on Thursday:

- Before noon Friday the assignment is considered 1 day late.
- Before noon Monday the assignment is considered 2 days late.
- After noon on Monday the assignment will not be accepted.

Saturdays, Sundays, and school holidays do not count as late days. Late days do *not* extend beyond the last day of class.

Each student is given five free late days to use over the course of the semester. The lateness of an assignment will be determined according to the rules given above, and the first five late days used during the semester will be forgiven. After that, each late day will result in a 10% penalty.

Important notes:

- Even using free late days, students cannot submit assignments more than two days late and receive credit. No assignments will be accepted more than two days past the original deadline.
- Free late days are applied to the *first* five late days during the semester. Students cannot control which late days are penalized and which ones forgiven; the first five late days in the semester are forgiven, and the rest are penalized.
- Free late days only apply to students who submit *every* assignment within the two-day cutoff period. For example, if you fail to submit the fifth assignment, or submit it more than two days late, you will forfeit all free late days, *including those used for earlier assignments*.
- No other extensions will be granted, except under exceptional circumstances. Students should reserve their free late days to use in the event of illness, emergencies, traveling, sports conflicts, etc. Students are advised not to use their free late days early in the semester, as assignments tend to get more difficult and schedules tighter as the semester progresses.

Collaboration

Limited collaboration with other students in the course is permitted. Students may seek help learning concepts and developing programming skills from whatever sources they have available, and are encouraged to do so. Collaboration on assignments, however, must be confined to course instructors, lab assistants, and other students in the course. Students are free to discuss strategies for solving programming assignments with each other, but this must not extend to the level of programming code. Each student must code his/her own solution to each assignment. See the section on cheating.

Cheating

Cheating will not be tolerated, and will result in a failing grade for the students involved as well as possible disciplinary action from the college. Cheating includes, but is not limited to, turning in homework assignments that are not the student's own work. It is okay to seek help from others and from reference materials, but only if you learn the material. As a general rule, if you cannot delete your assignment, start over, and re-create it successfully without further help, then your homework is not considered your own work.

You are encouraged to work in groups while studying for tests, discussing class lectures, discussing algorithms for homework solutions, and helping each other identify errors in your homework solutions. If you are unsure if collaboration is appropriate, contact the instructor. Also, note exactly what you did. If your actions are determined to be inappropriate, the response will be much more favorable if you are honest and complete in your disclosure.

Where collaboration is permitted, each student must still create and type in his/her own solution. Any kind of copying and pasting is *not* okay. If you need help understanding concepts, get it from the instructor or fellow classmates, but never copy another's code or written work, either electronically or visually. The line between collaborating and cheating is generally one of language: talking about solutions in English or other natural languages is usually okay, while discussions that take place in programming languages are usually not okay. It is a good idea to wait at least 30 minutes after any discussion to start your independent write-up. This will help you commit what you have learned to long-term memory as well as help to avoid crossing the line to cheating.

University Policies

[Utah Tech Student Policies](#)

Disability/Accessibility Resources

Utah Tech strives to make learning materials and experiences accessible for all students so if you are a student with a medical, psychological, or learning disability or anticipate physical or academic barriers based on disability, you are welcome to let me know so we can discuss options. Students with documented disabilities are required to contact the Disability Resource Center located in the North Plaza Building, next to the Testing Center (435-652-7516) to explore eligibility process and reasonable accommodations related to disability.

Title IX Statement

Utah Tech seeks to provide an environment that is free of bias, discrimination, and harassment. If you have been the victim of sexual harassment/misconduct/assault we encourage you to report this to the university's Title IX Director, Cindy Cole, (435) 652-7731, cindy.cole@utahtech.edu. If you report to a faculty member, she or he must notify the Title IX Director about the basic facts of the incident.

Email Disclaimer

You are required to frequently check your campus email account. Important class and university information will be sent to your campus email account, including Utah Tech bills, financial aid/scholarship notices, notices of canceled classes, reminders of important dates and deadlines, and other information critical to your success at Utah Tech and in your courses. To access your campus email account, visit mail.utahtech.edu. Your username is your Digital ID (e.g. D00111111) If you have forgotten your PIN, visit my.utahtech.edu and click the "Forgot Pin" button.

Useful Resources

- [Disability Resource Center](#)
- [IT Help Desk](#)
- [Library](#)
- [Testing Center](#)
- [Tutoring Center](#)
- [Writing Center](#)

Important Dates Fall 2024

Click on [this link](#): for the official academic calendar, which has several important dates you should be aware of.

Aug 19 - Date classes begin

Aug 23 - Last day to add without instructor permission

Sep 9 - Last day for refund of tuition and fees

Sep 9 - Pell Grant census date

Sep 13 - Last day to add or audit classes with instructor permission

Oct 9 - Midterm grades posted

Oct 14 - Last day to drop an individual class

Nov 13 - Last day for complete withdrawal from all classes

Dec 5 - Last day of classes

Dec 9-12 - Final Exam dates

Dec 16 - Final grades posted