

SYLLABUS

CS2302 CRN 23591: Data Structures Spring 2024

Lectures: TR 10:30AM to 11:50AM in LART 319

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INSTRUCTIONAL TEAM and OFFICE HOURS

- Dr. Martine Ceberio (she/her/hers; mceberio@utep.edu): MW 10:30AM to noon in CCSB 3.0406
- [TA] TBA
- [IA] Logan Armendariz (he/him/his; ljarmendariz1@miners.utep.edu): TBA
- [IA] Emilio Rojero Rodriguez (he/him/his; earojerorod@miners.utep.edu): TBA

COURSE DESCRIPTION

This is the third and last course of the Computer Science introductory sequence. Students will further develop their understanding of algorithms and the data structures that support them. They will be able to make pertinent choices of data structures and algorithms to solve given problems, and discuss their performance. They will practice recursion and study new problem-solving strategies and types of algorithms, e.g., dynamic programming and greedy algorithms. They will cover a number of algorithms, including graph algorithms. The programming language of this course is Python.

Prerequisite: (CS 2401 w/C or better)

AND

{ (MATH 2300 w/C or better) OR (CS 2101 w/C or better AND CS 2202 w/C or better) }

Knowledge and Abilities Required Before Entering the Course:

Students are assumed to be comfortable with programming in Java. Students should be able to code and discuss sort and search algorithms, as well as data structures covered in CS2. They should have an understanding and working knowledge of time complexity.

MODE OF INSTRUCTION AND PLATFORMS

This course is scheduled in person.

We will use an **MS Team** + its integrated **OneNote notebook**, to share information, store lecture notes, etc. All quizzes and exams will be uploaded to **Gradescope** by our instructional team, and students will be able to review their grades and feedback directly from their Gradescope account.

Note: By now, you should all have received an email from MS Teams and Gradescope informing you that you had been added to my MS Team and Gradescope course.

TEXTBOOK

It is essential that everyone uses the class textbook. We will be using a textbook from zybook. You are expected to acquire the book by the end of Week 1. Please follow instructions below:

1. Sign in or create an account at learn.zybooks.com
2. Enter zyBook code

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3. Subscribe

Subscription is **\$89**. Students may begin subscribing on January 1, 2024, and the cutoff to subscribe is May 11, 2024. Subscriptions will last until June 13, 2024.

COURSE ASSIGNMENTS/ASSESSMENT AND GRADING

There will be 5 types of assignments / assessments this semester:

1. Homework assignments
2. Lab assignments
3. Quizzes
4. Examinations
5. Professionalism

1. Homework assignments

Homework assignment will usually be activities assigned on your zybook. You are expected to make yourself familiar with the textbook and locate the assignments: there is work already assigned and you should be able to complete it already. On occasion, additional assignments will be given in class, either to complete during class or at home.

Note: if you must miss class, it is your responsibility to inquire with your classmates about whether any homework was assigned during class.

2. Lab assignments

Lab assignments are designed for students to further their practice of the concepts presented in class and to demonstrate their level of mastery on these concepts. You will be given 4 lab assignments. You will be expected to meet twice with your TA/IAs to check on the progress of each lab at designated stages of the lab work (and this will be part of your grade under professionalism). **Regardless of your standing in the class, you can only pass the class if you receive passing professionalism grades on all of your 4 labs.**

Note: in CS2302, there is no closed lab.

Note: Labs will not be graded. Instead, they will yield a grade under professionalism (see further below).

3. Quizzes

The purpose of each quiz is to ensure that students are staying current with the concepts covered in class, with their homework assignments, and that they are completing their labs. Quizzes are a way to verify that students have acquired the skills presented and practiced in class, and also an opportunity for students to demonstrate mastery. **Quizzes are unannounced but will be given at least weekly.** All quizzes are **in-person quizzes**. There will be no make-up on missed quizzes, but quizzes will be available on our class notebook for students to practice even if they missed them.

4. Examinations

There will be 3 midterm exams (1 hour and 20 minutes each, in class), and one comprehensive final exam (on May 9). Because we will be covering many concepts this semester, it is essential that you work consistently, giving your best at each exam, so you are better prepared to perform at the final exam.

The purpose of the midterm exams is to allow you to demonstrate mastery of course concepts covered thus far during the semester (hence each exam is comprehensive). **Mid-term exams will be given in person during class time.** Their tentative schedule is February 29, March 26, and April 20 (see schedule below). Make-up exams will be scheduled only as a result of extremely unusual circumstances. If you must miss an exam, please meet with an instructor BEFORE the exam. One make-up exam time will be scheduled per

midterm examination (during the session immediately following the scheduled exam). There will not be any other make-up options.

*Important note: Regardless of your grade in the course at that time, you must score **70% or better on the final exam** to pass this course.*

If you have test-taking difficulties in general, or if you have difficulties with our tests in particular, please request appropriate accommodation from UTEP's Center for Accommodation and Students' Services – CASS (see below for more details).

5. Professionalism / Effort

Professionalism includes:

- Reading and understanding the syllabus and abiding by its rules;
- Communicating effectively with the instructional team, which will require you to check your MS Team messages at least once a day (and reply to them if relevant);
- Communicating with the instructional team if you are to miss class or be late to / leave early from class, if you struggle with anything in class or while working on your lab assignments;
- Actively participating in class, being on task, directing your attention to the task / activity as directed by the instructor;
- Actively working on your lab in a timely manner and checking in with the IAs/TA as requested per the lab assignments (see lab assignments);
- Putting yourself up to speed when you must have missed a class or part of a class.

And certainly not: e.g., texting, social networking, working on homework for another course, checking other courses / goldmine / etc., watching videos, etc. Missing an undue number of lectures, even if excused, is also considered to negatively affect your level of professionalism (see below).

Failing to behave professionally (including – but not limited to – not showing up for lab meetings, or showing up unprepared, missing more than 4 lectures without justification, or 6 with justification – note: 2 incomplete sessions = 1 absence) may result in the student being dropped.

Due Date of Assignments

Deadlines will consistently be on Tuesdays at 11:59PM.

GRADES

Grades will be available to students in a timely manner on Gradescope (exams, quizzes), within the class notebook (parts of lab assignments), and on zybook (homework and parts of lab assignments). Quizzes and exams' grades will be available on Gradescope (students can also request regrades on Gradescope). Homework and part of lab grades will be available on the course's Zybook. The rest of the lab grades will be available directly in your OneNote notebook for the class. As a result, students can easily keep track of their grades and are expected to keep track of them using some excel-like tool.

In case of any doubt about their standing, students are encouraged to contact the instructor. Your semester grade will be based on a combination of the performance you demonstrated on each of the above types of assignments, as shown below:

Professionalism	20%
Homework / Quizzes	10%
Midterm exams (3) & Final exam	70%

The nominal percentage-score-to-letter-grade conversion for CS 2401 is as follows:

- 90% or higher is an A
- 80-89% is a B
- 70-79% is a C
- 60-69% is a D
- Below 60% is an F

Important Note: Regardless of your standing in the class at that time, in order to pass the course, you need to earn a C or better at the final exam + earn a passing professionalism grade on all your labs.

EXPECTATIONS

As you were told during UTEP orientation (possibly a few semesters ago), you should expect to spend 3 hours per credit hour working on your classes outside of class. As a result, you should spend about 9 hours per week working on CS2302 outside of class.

COMMUNICATION

Communication with all members of the instructional team (instruction / TA / IAs) is expected to be as follows:

- **How to reach us? How will we reach out to you?** All communication is to take place within the private messages of MS Teams and on our class MS Team's General Channel. Emails may not be answered.
- **Communication style** Although we will be using the MS Teams messages to communicate, communication is expected to be professional. You are expected to use proper greetings (certainly not "hey", "hello?", etc.).
- **Communication pace** Our plan (and, we expect, yours too) is to reply messages within 2 business days. This means that you are expected to check your messages at least every other day. If for any reason, we fail (or you do) to reply your message within this time, kindly try again and simply assume that we must have received many messages and may not have seen yours yet. We will do the same for you. Of course, we do not expect such situations to repeat; that is, we do not expect to miss your messages more than one time; and we will expect the same from you.

INTERPERSONAL COMMUNICATION

Using the right pronouns, like using someone's correct name, is a way to show respect. Everyone has the right to be addressed and referred to by the name and pronouns that correspond to their identity, even if they differ from what appears on the roster. Class rosters are provided to the instructor with the student's legal name. I will not read this list out loud in class and instead will gladly honor your request to address you by the name and gender pronoun you would like to be addressed by (as specified in the form, filled out during the first day of class). I recognize that people use different names and gender pronouns for a variety

of reasons and that they may change over time (note that you can inform me of any change at any time during the semester). All students are also expected to be mindful of correct name and pronoun use. However, we collectively recognize that mistakes happen, and agree to kindly point mistakes out to be corrected in an effort to honor each other's identify. [adapted from <https://www.nyu.edu/life/global-inclusion-and-diversity/learning-and-development/toolkits/trans-inclusive-classrooms.html>].

ATTENDANCE POLICY

This course is scheduled in person. Attendance is crucial to your success. Too many absences (starting at 4) along with a lack of communication on your part will result in being dropped from the course. In case of absence, you are expected to catch up with the material and make yourself aware of assignments that might have been given during your absence.

INCOMPLETE POLICY

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

DROP POLICY

Every semester, some students drop courses. We, instructors, completely understand and respect that. We only hereby ask students to inform us, ideally before, but in the worst-case right after, of their intention to drop the course. This is really important for us as it possibly informs us of ways in which to better serve our students. To drop this course, please contact your academic advisor and then the [Registrar's Office](#) to initiate the drop process. If you do not, you are at risk of receiving an "F " for the course.

Spring Semester Drop/Withdrawal Deadline: March 28th.

ACCOMMODATION POLICY

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services](#). If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148 or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. CASS' staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.

SCHOLASTIC INTEGRITY

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Scholastic dishonesty includes, but not limited to cheating, plagiarism, collusion, and submission for credit of any work or materials that are attributable to another person.

Cheating may involve:

- Copying from the test paper of another student
- Communicating with another student during a test to be taken individually
- Giving or seeking aid from another student during a test to be taken individually
- Possession and/or use of unauthorized materials during tests (i.e. crib notes, class notes, books, etc.)

- Substituting for another person to take a test
Falsifying research data, reports, academic work offered for credit
- Plagiarism** is: Using someone's work in your assignments without the proper citations
Submitting the same paper or assignment from a different course, without direct permission of instructors
To avoid plagiarism, see this [website about avoiding plagiarism](#).
- Collusion** is: Unauthorized collaboration with another person in preparing academic assignments

Important! When in doubt on any of the above, please contact your instructor to check if you are following authorized procedure. Also, please check the [UTEP's Handbook of Operating Procedures](#) at: hoop.utep.edu.

Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. Any student who commits an act of scholastic dishonesty is subject to discipline.

All suspected violations of academic integrity at The University of Texas at El Paso will be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more [HOOP: Student Conduct and Discipline](#).

GUIDANCE ON ARTIFICIAL INTELLIGENCE

The use of generative AI tools such as Chat GPT is permitted in this course for the following activities, which must be noted or cited:

Asking **general questions** about concepts covered in class – Note that if you use this information, in an assignment, you should cite the use of AI along with the question you asked to produce the knowledge used.

However, you may not use AI tools to complete the following activities:

Asking the AI tool to answer any question or assignment given to you in class or in a lab assignment (whether verbatim or rephrased).

Asking specific questions whose answer leaves no room for critical thinking and application of knowledge.

Students must cite any borrowed content sources to comply with all applicable citation guidelines, copyright law, and avoid plagiarism. Instances that violate these guidelines will be referred to the Office of Student Conduct and Conflict Resolution.

STUDENT RESOURCES

UTEP provides a variety of student services and support:

- [UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- [Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the [Helpdesk](#) via phone (915-747-4357), email (helpdesk@utep.edu), [chat](#), or [website](#).
- [University Writing Center \(UWC\)](#): Submit papers to [UWC](#) for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- [Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.
- [Military Student Success Center \(MSSC\)](#): UTEP welcomes military-affiliated students to its degree programs. The Military Student Success Center and its dedicated staff (many of whom are veterans and students themselves) are there to help personnel in any branch of service to reach their educational goals.
- [RefWorks](#): A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.

[More complete and updated information can be accessed at this address.](#)

COURSE CALENDAR (tentative)

		GENERAL CONTENT	LABS
Week 1	16-Jan	Introduction of CS2302, syllabus, grading philosophy, academic dishonesty, etc.	LAB 1: review and intro to python / 01/30
	18-Jan		
Week 2	23-Jan	What you've learned so far	
	25-Jan		
Week 3	30-Jan		
SPRING CENSUS DAY = 1/3	1-Feb		
Week 4	6-Feb	Trees	LAB 2: trees, balanced trees / due 03/05
	8-Feb		
Week 5	13-Feb		
	15-Feb		
Week 6	20-Feb	Heaps	
	22-Feb		
Week 7	27-Feb		
	29-Feb	EXAM 1 on 2/29	
Week 8	5-Mar	Heaps	
	7-Mar	Dictionaries	
SPRING BREAK	12-Mar	SPRING BREAK	LAB 3: heaps and dictionaries / due 04/04
	14-Mar		
Week 9	19-Mar	Graphs	
	21-Mar		
Week 10	26-Mar	EXAM 2	
DROP DEADLINE = 3/28	28-Mar		
Week 11	2-Apr	Graphs	
	4-Apr		
Week 12	9-Apr		LAB 4: graphs and everything / due 05/04
	11-Apr		
Week 13	16-Apr	Practice & Review	
	18-Apr	EXAM 3	
Week 14	23-Apr	Practice & Review	
	25-Apr		
Week 15	30-Apr		
	2-May		
FINAL EXAM	9-May	10AM-12:45PM	10AM-12:45PM

COURSE OUTCOMES

Level 3: Synthesis and evaluation:

Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery. On successful completion of this course students will be able to:

1. Given a problem, judge which data structures are required to solve it efficiently and justify the selection.
2. Solve problems using arrays and lists.
3. Given a non-recursive algorithm, examine its loop structure, assess its asymptotic running time, and express it using big-O notation.
4. Given a recursive algorithm, examine its structure, formulate, and solve a recurrence equation defining its running time, and express it using big-O notation.
5. Design and implement solutions to computational problems based on iteration and recursion.
6. Trace the behavior of functions and algorithms involving iteration and recursion.

Level 2: Application and analysis:

Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work a problem of familiar structure with minor changes in the details.

Upon successful completion of this course, students will be able to:

1. Describe, implement, and use the following data structures:
 - a) Heaps
 - b) Balanced search trees
 - c) Graphs
2. Solve problems using hashing, specifically using language-specific data structures (e.g., sets and dictionaries in Python)
3. Describe, implement, and apply the following graph algorithms:
 - a) Breadth-first search
 - b) Depth-first search
 - c) Topological sorting
 - d) Minimum spanning trees (Kruskal's and Prim's)
 - e) Single-source shortest paths (Dijkstra's algorithm)
4. Assess the running times and space requirements of algorithms in relation to the size of the problem.

Level 1: Knowledge and comprehension:

Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. On successful completion of this course, students will be able to:

1. Identify and explain the following algorithm design techniques:
 - a) Greedy algorithms
 - b) Divide and conquer
 - c) Dynamic programming
 - d) Backtracking
 - e) Randomized algorithms

NETIQUETTE

As part of our interactions (outside the classroom) will be online, please read UTEP's [rules for online courses](#). They are available for you to read below. Here is also a link where you can access [the core rules of netiquette](#).

NETIQUETTE GUIDE FOR ONLINE COURSES

It is important to recognize that the online classroom is in fact a classroom, and certain behaviors are expected when you communicate with both your peers and your instructors. These guidelines for online behavior and interaction are known as netiquette.

SECURITY

Remember that your password is the only thing protecting you from pranks or more serious harm.

- Don't share your password with anyone
- Change your password if you think someone else might know it
- Always logout when you are finished using the system

GENERAL GUIDELINES

When communicating online, you should always:

- Treat instructor with respect, even in email or in any other online communication
- Always use your professors' proper title: Dr. or Prof., or if you in doubt use Mr. or Ms.
- Unless specifically invited, don't refer to them by first name.
- Use clear and concise language
- Remember that all college level communication should have correct spelling and grammar
- Avoid slang terms such as "wassup?" and texting abbreviations such as "u" instead of "you"
- Use standard fonts such as Times New Roman and use a size 12 or 14 pt. font
- Avoid using the caps lock feature AS IT CAN BE INTERPRETTED AS YELLING
- Limit and possibly avoid the use of emoticons like :) or ☺
- Be cautious when using humor or sarcasm as tone is sometimes lost in an email or discussion post and your message might be taken seriously or offensive
- Be careful with personal information (both yours and other's)
- Do not send confidential patient information via e-mail

EMAIL NETIQUETTE

When you send an email to your instructor, teaching assistant, or classmates, you should:

- Use a descriptive subject line
- Be brief
- Avoid attachments unless you are sure your recipients can open them
- Avoid HTML in favor of plain text
- Sign your message with your name and return e-mail address
- Think before you send the e-mail to more than one person. Does everyone really need to see your message?
- Be sure you REALLY want everyone to receive your response when you click, "reply all"
- Be sure that the message author intended for the information to be passed along before you click the "forward" button

MESSAGE BOARD NETIQUETTE AND GUIDELINES

When posting on the Discussion Board in your online class, you should:

- Make posts that are on topic and within the scope of the course material
- Take your posts seriously and review and edit your posts before sending
- Be as brief as possible while still making a thorough comment
- Always give proper credit when referencing or quoting another source
- Be sure to read all messages in a thread before replying
- Don't repeat someone else's post without adding something of your own to it
- Avoid short, generic replies such as, "I agree." You should include why you agree or add to the previous point
- Always be respectful of others' opinions even when they differ from your own
- When you disagree with someone, you should express your differing opinion in a respectful, non-critical way
- Do not make personal or insulting remarks
- Be open-minded