

# SYLLABUS

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## **CS2401: Elementary Data Structures Fall 2022**

Lectures: MW 10:30AM to 11:50AM in LART 106

Labs: MW 12PM to 1:20PM in CCSB 1.0704

### **INSTRUCTIONAL TEAM and OFFICE HOURS**

- Martine Ceberio (instructor, mceberio@utep.edu): MW 8:30AM to 10AM in CCSB 3.0406
- Marlon Gamez (instructor, marlongamez@google.com): TBA
- [TA] Jonatan Contreras (jmcontreras2@miners.utep.edu): TBA
- [IA] Bradley Beltran (bjbeltran@miners.utep.edu): TBA
- [IA] David Dominguez-Garcia (dedominguez2@miners.utep.edu): TBA

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### **COURSE DESCRIPTION:**

This is the second course for students majoring in Computer Science. Students will learn about fundamental computing algorithms including searching and sorting; recursion; elementary abstract data types including linked lists, stacks, queues and trees; and elementary algorithm analysis.

**Prerequisite:** CS 1301 and CS 1101 with a grade of C or better in both.

#### **Knowledge and Abilities Required Before Entering the Course:**

Students are assumed to be comfortable programming in Java. Students should be able to code basic arithmetic expressions, define simple classes, use strings, code loops and conditional statements, write methods, create objects from classes, invoke methods on an object, perform basic text file input and output, and use arrays.

### **MODE OF INSTRUCTION AND PLATFORMS:**

This course is scheduled in person.

We will use an **MS Team** and its associate **OneNote notebook**, to share information, store lecture notes, some assigned readings, etc.

All quizzes and exams will be uploaded to **Gradescope** and students will be able to review their grades and feedback directly from their Gradescope account.

All labs will be submitted via **Repl.it**.

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

### **TEXTBOOK:**

It is essential that everyone uses a textbook. This semester, we are piloting a new approach to textbooks. There will be no unique prescribed textbook, but each student should use one, among a list we provide below:

- Pearson Java Revel: We will provide you with a code to join our textbook
- Introduction to Java Programming and Data Structures, by Daniel Liang

Or another book through your instructor's approval.

## COURSE ASSIGNMENTS AND GRADING:

There will be 6 types of assignments / assessments this semester:

1. Homework assignments
2. Quizzes
3. Lab assignments
4. Examinations
5. Active participation in class / lab
6. Professionalism

### *1. Homework assignments*

Homework assignment can be reading assignments (topics covered in your respective textbooks or assigned readings available directly in our class OneNote notebook) or practice activities. Homework assignments will be given a due date as an indication of when it should be completed, but it will not be directly assessed. Instead, students will demonstrate their completion and learning by taking almost daily quizzes.

### *2. Quizzes*

The purpose of each quiz is to ensure that students are staying current with the concepts covered in class and with their homework assignments. They are a way to verify that students have acquired the skills presented and practiced in class/lab. **Quizzes are unannounced but pretty much daily.** All quizzes are **in-person quizzes**. There are no make-up on missed quizzes, but quizzes will be available for students to practice even if they missed them.

### *3. Lab assignments*

Lab assignments are designed for you to further your practice of the concepts presented in class and to demonstrate your level of mastery on these. In lab, you will typically work on either small lab activities related to currently covered concepts or concepts in which your instructional team thinks you should acquire more fluency (we call these minilabs), or more substantial (more comprehensive) lab assignments (longer comprehensive labs). Tentatively (see schedule and deadlines), we are planning 7 mini labs and 2 longer labs during this semester.

**Important Reminder:** You need to score 70% or higher in the labs portion of the course grade to pass CS2401, regardless of your course average otherwise.

### *4. Examinations*

There will be 2 midterm exams (1 hour and 20 minutes each in class), and one final exam. Because we will be covering so many concepts this semester, it is essential that you work very consistently, giving your best at each exam, so you are better prepared to perform at the final exam.

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 (see below for more details).

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 October 5 and November 21.

Make-up exams will be given 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 (the session immediately following the scheduled exam). There will not be any other make-up options.

The final exam will be comprehensive. You must score 70% or better on the final exam to pass this course.

### *5. Active participation*

Class and Lab Participation: Attendance and participation in all lecture and lab sessions are critical factors of your success in this course.

Students should be on time for all scheduled sessions and attend the entire session. Attendance will be taken at the beginning of every session and, along with evidence of your active participation, will count towards your class participation grade.

During lectures and labs, you should be on task. When in lecture or lab session, you are expected to direct your attention to the task / activity as directed by the lecture / lab instructor. For instance, lecture and lab sessions are certainly not places for social-networking, working on homework, checking other courses / goldmine / etc.

#### **What happens if I am late to class?**

If it is a pattern, we will count you absent for the sessions in which you are late at least 15 minutes. These absences will count towards the maximum of 6 absences after which we will drop you.

Although leaving early is not allowed (unless authorized by the instructor), if you leave early without authorization, you will be counted absent for the whole session and the absence will count towards you maximum 6 absences.

#### **What happens if I miss class?**

If you cannot attend a lecture / lab, you must inform your instructor. Documented absences (doctor's notes, court documents, etc.) will be excused and will not count towards the maximum of 6 absences.

When you miss class, if we do not hear from you, we will contact you. It is essential that you consult your MS Teams messages on a daily basis. If you are absent more than 6 times (lectures and labs combined) and do not communicate with us promptly and/or do not reply to our emails/messages as we are trying to reach out to you, you will be dropped from the class within a week.

**Late submission of work:** Students should submit their work on time and meet all deadlines. Failing to do so will affect the effort grade and prevent resubmission authorization.

### *6. Professionalism / Effort*

Each graded assignments will be assessed for technical correctness but also for effort. Effort is measured by the amount of work produced and how aligned it is with each student's current mastery of concepts. Also, in case the technical grade is not an A, the effort grade will include whether the work was submitted on time, and how much the student has reached out to the instructional team to resolve their struggle. If the effort grade is an A or a high B, the student will be allowed to work with the instructional team to resubmit their work within 2 weeks of the original deadline, for an updated (higher) technical grade.

### Due Date of Assignments

Deadlines this semester will consistently be on Sunday at 11:59PM, as follows:

- Lab assignments will always be due Sundays at 11:59PM
- Homework assignments are to be completed (not submitted) by Tuesdays at 11:59PM

### GRADES:

Grades will be available to students in a timely manner. Quizzes, exams, and labs will be graded on Gradescope. As a result, students can easily keep track of their grades, as well as using our frequent communication. In case of any doubt about their standing, students are encouraged and welcome 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:

Class/ Lab Participation	3%
Professionalism	10%
Homework / Quizzes	7%
Labs	40%
Midterm exams & Final exam	40%

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 AND
- a C or better as your average grade on the lab assignments.

### EXPECTATIONS

You should expect to spend at least four hours per week outside of lecture on reading and homework. You should plan to devote four extra hours on your lab assignments outside of lab sessions.

### 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. 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 speed** 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. 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.

#### **ATTENDANCE POLICY:**

**This course is scheduled in person.** Attendance is crucial to your success. It will be recorded and counted for class participation.

#### **LATE WORK POLICY:**

Late work will be penalized by 10 points each day up to 3 days. After that, the work will be graded 0.

#### **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.

Fall Semester Drop/Withdrawal Deadline: October 28<sup>th</sup>.

#### **LECTURE NOTES**

**Lecture notes will be available on the MS Team of our class, in particular within its OneNote notebook. This will enable you to have access to class lectures notes in the event you miss class due to illness or other extenuating circumstance.**

#### **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](mailto: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](http://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](#).

#### 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](mailto: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:

### CS2401 Fall 2022 **Tentative** Schedule

**MW 10:30AM to 11:50AM LART106**

Week #	Date	Topic/Focus
1	22-Aug	Intro to the course
	24-Aug	Review of CS1 concepts
2	29-Aug	Strings, 2D arrays
	31-Aug	Intro to complexity
<b>3</b>	<b>5-Sep</b>	<b>LABOR DAY</b>
	7-Sep	More practice on previous concepts
4	12-Sep	Sorting
	14-Sep	Recursion
5	19-Sep	
	21-Sep	Sorting
6	26-Sep	
	28-Sep	
<b>7</b>	<b>3-Oct</b>	<b>Review for Exam 1</b>
	<b>5-Oct</b>	<b>EXAM 1</b>
8	10-Oct	Linked lists
	12-Oct	
9	17-Oct	
	19-Oct	
10	24-Oct	Binary trees
	26-Oct	
11	31-Oct	
	2-Nov	Binary Search trees
12	7-Nov	
	9-Nov	Stacks and Queues
13	14-Nov	
	16-Nov	<b>Review for Exam 2</b>
<b>14</b>	<b>21-Nov</b>	<b>EXAM 2</b>
	<b>23-Nov</b>	<b>Review session</b>
15	28-Nov	General review
	30-Nov	
<b>16</b>	<b>9-Dec</b>	<b>FINAL EXAM</b>

## COURSE OUTCOMES:

**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:

- Demonstrate their understanding of the features of object-oriented languages (related to the implementation of the Data Structures discussed through this course)
- Articulate the notion of average-case time complexity

**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 algorithms for:
  - a) Searching: linear and binary search
  - b) Sorting: merge sort, quick sort, and at least one quadratic sorting algorithm
2. Use basic notions of algorithm complexity:
  - a) Use Big-O notation to describe the running time and memory requirements of an algorithm
  - b) determine the best- and worst-case behaviors of simple algorithms
3. Use standard problem-solving techniques such as: problem decomposition, iteration, recursion.

**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. Implement and use the following data structures to solve computational problems:
  - a) Linked lists
  - b) Binary trees as linked structures
  - c) Binary search trees as linked structures
  - d) Stacks
  - e) Queues
2. Trace code that uses:
  - a) Strings
  - b) Single-value data types
  - c) 1D and 2D arrays
  - d) Reference-based structures
  - e) Iterative methods
  - f) Recursive methods
  - g) Primitive vs. non-primitive data types

#### **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