

INSTRUCTOR INFORMATION

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Office Hours: M/W 1:30 – 3:00 PM
Thursday 3:30 – 4:30 PM
Or by appointment
All office hours will be held virtually through Blackboard Collaborate.
Please use the link provided in eLearning

Questions: All questions must be in person (class time and office hours) or posted to Piazza (<http://piazza.com/utdallas/Fall2021/cs23366>). I will not answer questions by email. While I may answer general questions in your Discord server, please do not tag me to answer a specific question.

COURSE INFORMATION

Course Number CE/CS 2336.003
Credit Hours 3
Meeting Time Tu/Th 10:00 – 11:15 AM
Room ECSS 2.410

DO YOU NEED ASSISTANCE?

Problem Solving Procedure

1. Try to solve it yourself – use the internet to research the problem and try different solutions. If you can't solve it after a couple of hours move to the next level.
2. Consult with your classmates – Post your question in Piazza or the class Discord server. On Piazza, you will be able to post your questions (anonymously if you wish) about anything related to the class and get a response either from me or a classmate. Private posts (that only I can see) should be reserved for grade related questions or questions involving large snippets of code. Since there are multiple people that can answer questions, you should get a quick response allowing you to complete the tasks you are working on. If your question can't be answered there, move to the next level.
3. Visit the CSMC – If your classmates can't answer the question, check with a mentor at the CSMC (<https://csmc.utdallas.edu>). If the CSMC mentors can't answer your question, move to the next level.
4. Visit me during office hours – If you are truly stumped, I will give you the information you need to move forward.

Help Desk: For help with issues regarding your computer, UTD maintains a walk-in help desk. Visit their Web site for details: <http://www.utdallas.edu/ir/helpdesk/>

If you need help, please make the effort to reach out. We can't help you if we don't know that you need help.

Resources:

- <http://javabeginnerstutorial.com/core-java/>
- <http://stackoverflow.com/questions/tagged/java>
- <http://introcs.cs.princeton.edu/java/10elements/>

WHAT DO I NEED FOR CLASS?

- **Textbook (Required)**
 - **Zybooks**
 - CS 2336 – Computer Science II
 - ISBN: 978-1-394-06875-3
- **Java (Required)**
 - All projects you submit will be executed with **Java SE 11**. This is a free download for all OS's. <http://www.oracle.com/technetwork/java/javase/downloads/index.html>
 - You may use any IDE you prefer.
 - If you prefer not setting up an IDE, you can use an online IDE such as Online GDB (<https://www.onlinegdb.com/>)
- **Note Taking Supplies** – I expect you to actively take notes. Anything discussed in class or available in the textbook is fair game on a test. Have something available to collect all the knowledge given to you (be that in physical or digital form).
- **A computer (optional)** – Obviously, you need a computer for this class. Any computer bought off the shelf is sufficient for this class. However, if you do not have a computer, the CS computer lab is open 24/7 and contains all the software you will need for this class.

I do not permit computers in class. Tablets or laptops that can be converted into tablet mode are allowed for students to take notes. Exceptions will be made for those students that have accommodations from the Office of Accessibility.

I know this may not make sense to prohibit computers in a computer science classroom, but trust me on this one. I have seen a extremely positive result when doing this. Without a computer in front of them, students are more engaged during class time. The lack of computer allows students to focus on the logic or details behind the code. All code written on class will be made available to you once it is completed so that you can experiment with it on your own time.

REQUIRED COURSE INFORMATION SECTION

Course Prerequisite: CE/CS/TE 1337 with a grade of C or better or equivalent.

Course Pre-/Co-requisite: currently taking CE/CS/TE 2305 or have earned a C or better in CE/CS/TE 2305 (or equivalent).

Description of Course Content: Further applications of programming techniques, introducing the fundamental concepts of data structures and algorithms. Topics include recursion, fundamental data

structures (including stacks, queues, linked lists, hash tables, trees, and graphs), and algorithmic analysis. Includes comprehensive programming projects. Programming language of choice is Java.

Student Learning Outcomes: Students will be able to implement different data structures using the Java programming language. They will be able use different data structures to program solutions to solve real problems. It will also help them understand algorithmic analysis and complexities. After successful completion of this course, you should be able to:

- Ability to implement recursive algorithms
- Ability to implement linked lists, stacks, and queues
- Ability to implement a binary tree
- Ability to use hash tables and graphs
- Ability to understand algorithmic analysis
- Ability to create a comprehensive programming project
- Ability to implement and use generics/templates

Departmental Attendance Policy: The Computer Science Department has implemented the following attendance:

If a student misses three consecutive classes, the student will receive a letter grade reduction to his or her final grade. This deduction is cumulative, so if a student misses three consecutive classes twice, the final grade will be reduced by two letter grades. **If a student misses four consecutive classes, the student will automatically receive an F for his or her final grade.**

WHAT I EXPECT OF EACH STUDENT

- **Ask for help at any time.** If you do not understand something or are having trouble implementing a concept, reach out. During lecture, before/after class, during office hours, at 3 AM while cramming for an exam, etc. **I really mean any time.** The sooner you ask that question, the sooner you will get an answer. That answer will allow you to move forward. I want you to succeed; don't be afraid to ask a question.
- **Take responsibility for your education.** This course is taught in a flipped classroom format meaning that most of the learning happens outside of the classroom. I structure this course as similar to a professional setting as I can. This means that during some assignments, there will be times when you will need to do a little research to better understand how to apply a concept. Class time will be used to fill in knowledge gaps about concepts, so you need to have a basic understanding of the concepts beforehand.

I am not the type of teacher that lectures with slides and expects students to memorize them. I teach by creating program examples in class and asking you to participate in completing the code as well as ask questions about things you don't understand. I will give challenging assignments to push you toward learning the intricacies of C++ and developing core programming skills.

Part of being a professional is learning how to teach yourself. I am going to guide you through the topics of the semester, but a significant portion of what you take with you to the next class will be things that you have learned on your own.

- **Practice time management skills.** Good time management is necessary for this class. All assignments (homework and projects) are designed to be worked on over a period of days or weeks. I expect that you will work on the assignment a little at a time rather than waiting until a day or two before it is due. **Those that procrastinate will find this class to be**

extremely stressful and will face the risk of below average grades.

- **Attend every class.** You are paying for an education. Don't waste your money by skipping class.
- **Make mistakes!** This is how you learn. Don't be discouraged when something goes wrong. Programming takes lots of practice and mistakes will always happen. Study the mistakes you made so that you can learn from them.

WHAT EACH STUDENT SHOULD EXPECT

- **A problem solving class.** This class is not a programming class. Computer science is all about problem solving. The content of this class is to teach you how to solve problems using a computer. In order to solve those problems, you will need to learn a foreign language (Java) and write solutions that the computer can interpret.
- **An open environment dedicated to learning.** I want students to feel free to voice their opinions. Oftentimes as we code in class, I will ask students what they would do in a certain situation. I want each student to feel as if he/she can speak freely and also be open for other students to discuss that idea, even if that means that some students will disagree.
- **Class commitment of 10 hours a week on average outside of class.** Students should be prepared to tackle multiple course-related activities each week (e.g. reading the textbook, studying for quizzes/exams, practicing programming, etc.). Procrastinating on an assignment will largely increase the number of hours spent each week.
- **Exams focused on application.** I do not create run-of-the-mill multiple choice exams that ask students to regurgitate things from memory. The exams are completely different than anything you have had in any other class (unless you've had me for a previous class). I expect you to apply the knowledge you have learned to the situations on the test. Questions on the test are designed to make sure that you understand what you are doing rather than repeating an example from your notes or the textbook.
- **A simulated professional experience.** The projects in this class require you to exercise strategies found in "the real world". Your logic for a project may force you to learn new techniques that haven't yet been discussed in class. You will have to perform code maintenance and improve the efficiency of previously written code. These things offer a small taste of how life might be once you graduate and are given large sums of money by a company seeking your skills.
- **A deep understanding of Java and basic data structures.** My goal is for you to know all of the topics of CS 2336 as well (if not better) than me, and I'm going to push you toward that goal. You should have peace of mind moving on in your program because you will be fully prepared to tackle what the next course in the sequence will throw at you.

THE INFORMATION YOU REALLY CARE ABOUT

Grading Scale:

98-100 A+	88-89 B+	78-79 C+	68-69 D+	Below 60 F
92-97 A	82-87 B	72-77 C	62-67 D	
90-91 A-	80-81 B-	70-71 C-	60-61 D	

Grade Components:	Project Zero	5%
	Projects (4)	40%
	Exams (2)	25%
	Preview Homework	10%
	Review Homework	10%
	In-class Assignments	10%

General Grade Information: All grades will be available in eLearning. The Weighted Total column will give you the most accurate information concerning your grade. The weighted total is an approximation of your grade in the class based on the grades currently in eLearning.

I do not curve grades. Assignments are combined into categories so that a low grade for one item will not destroy your grade. There are also opportunities provided to help students who may have done poorly on projects and exams.

Grade Disputes: **All grade disputes must be reported within 1 week and resolved within 2 weeks of the grade in question being posted in eLearning.** Uncontested grades will become final after 1 week and cannot be disputed later. Announcements are made after each grade is posted so please check your grades promptly and reach out to the proper person.

I am responsible for grading your exams. If you have questions regarding your exam, please contact me through a private post on Piazza.

Everything else will be graded by a TA. Please address any grading concerns you have regarding these grades with the TA. **When you email the TA with questions about your grade, copy me on the email so that I am aware of the situation and can make sure it is resolved.**

You are responsible for verifying that all grades in Zybooks are recorded in eLearning correctly. Once you submit your assignment in ZyBooks, remember to press the Submit to Blackboard button. Then, check My Grades in Zybooks to check that the correct grade was transferred.

Projects: Projects will be major programming assignments that supplement recently discussed topics and will be completed in two to three weeks. Projects are intended to take approximately 15-20 hours to complete overall; this includes the design, coding and testing process. Waiting until a couple of days before the due date to start the project is a bad idea. Not only does this introduce unnecessary stress into your life, it hardly ever ends well for the student. Most students score poorly on projects that are built in less than three days.

Projects will be divided into milestones as you would expect to see in the professional world. The milestones for each project are as follows:

- Design (4 days)
- Core implementation (7-10 days)
- Final implementation and testing (7-10 days)

Each milestone will be graded and the total of all three milestones will contribute toward the overall grade for the project. Each milestone will have a firm deadline and failure to meet the deadlines will have a negative impact on your grade.

Projects are individual endeavors and students are not to work in groups on any project. Students are permitted (and I openly encourage students) to discuss the project. Feel free to share ideas on the logic, but **DO NOT SHOW YOUR CODE TO OTHER STUDENTS.** When discussing logic, try to keep it general. If you give out every little piece of logic you have, there is a good chance the person you are helping will have very similar code as yours and may be flagged for being too similar. Be careful of posting your code online. Another student could use your code without your knowledge and could involve you in a code plagiarism referral.

Students should avoid using web sites like GitHub and Chegg for help on projects. Copying code from a web site is considered plagiarism and will be treated as such. If you find code on a web site, it is highly likely another student will find it as well which may cause both submissions to be flagged for similarity.

All projects will be submitted in ZyBooks and will be compared for originality. Any projects that are approximate or identical copies will be reported to the Office of Community Standards and Conduct, and I will accept their decision in regards to the grade if they believe that academic dishonesty has occurred.

Programming assignments will be graded on a 100 point basis. Not only will your project be graded on proper execution, but also things like efficiency, implementation and documentation. Keep in mind that you always want to write code that is easy to understand and is also easy to maintain. Fewer lines do not necessarily mean a better program. Please use comments liberally.

You are responsible for testing your project thoroughly before submission. I will not give you the exact test cases that will be used for grading before the project is due. As a computer scientist, you must be able to identify all possible input and make sure that your code produces proper output and does not crash.

Late Projects:

All project milestones will be due at 11:59 PM on the day listed in the project documentation. The final project code will be accepted up to 12 hours late with the following penalties

<= 1 hour	-5 points
1 – 3 hours	-10 points
3 – 12 hours	-25 points
12 – 24 hours	-50 points

Preview Homework: Preview homework assignments are questions based on the reading. These assignments will be in the form of quizzes in eLearning. Students will read the chapter and answer basic questions about the material to illustrate how well they understand the general concepts.

Review Homework: Review homework assignments are generally short coding assignments that can be done in 1-2 hours that measure how well you understand the material we have covered. These assignments are typically due 1 week from the date given.

Exams: Exams will cover chapters as listed below in the tentative course schedule. Exams will include a variety of question types including multiple choice, multiple answer and essay questions. Students are expected to be able to apply knowledge from all previous chapters in conjunction with the tested chapters. Exams are not created to make you feel smart; they are designed for you to demonstrate your understanding of the concepts. A high score on an exam exhibits a deep understanding of the topics.

An exam should not be missed except for the most extreme circumstances (such as hospitalization or death of an immediate family member). If you miss an exam, you must have documentation for the absence. A make-up exam may be given to students with valid documentation. The allowance of a make-up exam is at the sole discretion of the instructor.

All exams will be given online in eLearning. Students are expected to take the exam at the Testing Center on the day scheduled during the window of opportunity provided by the testing Center. The exams will be closed book and closed notes. All solutions to coding problems on the test will be submitted for similarity in an effort to maintain academic integrity.

You are expected to be at the Testing Center at your scheduled time. You must start the exam no later than 10 minutes after your scheduled time. Failure to do so will result in a 10 point penalty on the exam.

Assignment Due Date Exceptions: In general, assignments are not accepted late except for the final project code. However, I know that life has a way of bringing the unexpected at the most inopportune times. If you have a major life situation (personally or academically) that is creating difficulty for you to meet the given due date of an assignment, I will work with you to give an extension as long as you contact me **before** the due date.

ARE WE THERE YET?

All dates are subject to change at the discretion of the instructor

Date	Topic
8/24 8/26 8/31 9/2 9/7	Basic Elements of Java I/O and Control Structures User-Defined Functions Recursion Arrays Strings
8/30	Last day to add/swap classes
9/8	Last day to withdraw without "W"
9/9	Object-Oriented Design Classes
9/14	In-Class Assignment #1
9/16	Inheritance and Polymorphism
9/21	Inheritance and Polymorphism
9/23	In-Class Assignment #2
9/28	Arraylists Linked Lists
9/30	Linked Lists
10/5	Linked Lists Generics
10/7	Exception Handling
10/12	Abstract Classes Interfaces

10/14	In-Class Assignment #3
10/15	Mid-Term Exam
10/19	Stacks, Queues
10/21	In-Class Assignment #4
10/26	Binary Search Trees
10/28	Binary Search Trees
11/2	Binary Search Trees
11/3	Last day to drop
11/4	In-Class Assignment #5
11/9	Graphs
11/11	Graphs
11/16	In-Class Assignment #6
11/18	Hashing
11/22 - 11/26	FALL BREAK
11/30	Hashing
12/2	Measuring Algorithm Efficiency Big-O Notation
12/7	Algorithm Efficiency of Data Structures
Finals Week	Final Exam (Data Structures)

Assignment Calendar

All assignments due by 11:59 on the due date listed unless otherwise noted

All submissions are made using the provided links in eLearning

Assignment	Post Date	Due Date
Java Basics Preview 1 (Variables, Streams, Branches, Loops)	8/24	8/30
Project Zero Core Implementation	8/26	9/1
Java Basics Preview 2 (Functions, Recursion, Arrays, Strings)	8/24	9/5
Project Zero Final Submission	8/26	9/8
Classes Preview	8/24	9/8
Project 1 Pseudocode	9/9	9/12
Inheritance and Polymorphism Preview	8/24	9/15
Project 1 Core Implementation	9/9	9/19
Project 1 Final Submission	9/9	9/26
Arraylists and Linked Lists Preview	8/24	9/27
Project 2 Pseudocode	9/28	10/1

Generics and Exception Handling Preview	8/24	10/4
Project 2 Core Implementation	9/30	10/8
Abstract Classes and Interfaces Preview	8/24	10/11
Review Homework 1	10/7	10/13
Mid-term Exam	10/15	10/15
Stacks and Queues Preview	8/24	10/18
Project 2 Final Submission	9/30	10/20
Project 3 Pseudocode	10/21	10/25
Binary Search Trees Preview 1	8/24	10/25
Project 3 Core Implementation	10/21	10/31
Binary Search Trees Preview 2	8/24	11/1
Project 3 Final Submission	10/26	11/7
Graphs Preview	8/24	11/8
Project 4 Pseudocode	11/9	11/15
Review Homework 2	11/9	11/15
Hashing Preview	8/24	11/17
Review Homework 3	11/18	12/1
Project 4 Final Submission	11/11	12/4
Algorithm Efficiency Preview	8/24	12/1
Review Homework 4	11/30	12/7
Final Exam		

University Policies:

For all other University policies, please visit <http://go.utdallas.edu/syllabus-policies>