

EE422C – Software Design and Implementation II

Course Syllabus - Fall 2019

Class Meets: Three lecture hours on TTH from 9:30AM – 11:00AM in EER 1.518. In addition to the lectures, students are registered for a 1.5 hour recitation in EER 0.818 as listed in the course catalogue and determined by a unique section number:

Unique	Day	Recitation Day	Room
16160	TTH TH	9:30am-11am 11am-12:30pm	EER 1.518 EER 0.818
16165	TTH TH	9:30am-11am 12:30pm-2pm	EER 1.518 EER 0.818
16170	TTH TH	9:30am-11am 2pm-3:30pm	EER 1.518 EER 0.818
16175	TTH TH	9:30am-11am 3:30pm-5pm	EER 1.518 EER 0.818

Instruction Team

Instructor: Prof. Edison Thomaz	
Office: EER 7.818 South Tower	Office hours: TTH 12pm-1pm
Email: ethomaz@utexas.edu	
Phone: 512-471-6640	
TAs: Amr El-Azizi (elaziziamr@gmail.com) Wenxi Wang (wangwenxi0407@outlook.com) Aimun Khan (aimun.khan@utexas.edu)	TA Office Hours and Locations: M/W in the PM (TBD) - EER 0.814 T 2pm-3pm - EER 0.814 T 1am-12pm - EER 0.814

The TAs will be introduced at the beginning of the semester. Their role is to help you learn the course subjects, help with your programming problems during office/recitation hours, and to assist the instructor with grading and course support. Your TA is your

primary point of contact for this semester. Please get to know them. Office hours begin the week of Sept 2nd.

Course Description

Course Description: Methods for engineering software with a focus on abstraction; specification, design, and implementation of object-oriented code; design and implementation of object-oriented programs in Java; abstract data types; inheritance; polymorphism; parameterized types and generic programming; the operation and application of commonly used data structures; miscellaneous high-level programming topics.

Pre-requisites for the course: Computer Science 312 or Electrical Engineering 312 with a grade of at least C-. Incoming students are expected to know the basics of computers and computation; and how to program in C/C++ using features of the language, such as: variables and operators, built-in data types, execution control structures, pointers, arrays, screen I/O, structs, linked lists, and recursion. The student should know how to use basic programming tools and techniques, such as: a programming language development toolset and symbolic debugger. The incoming student should also have been introduced to subjects such as: abstract data types, program design techniques, object-oriented programming, advanced OO features (e.g. classes, objects, templates, inheritance, polymorphism, etc.), and C++.

Course Requirements

Textbook: *Data Structures and Problem Solving Using Java, 4/E*, Mark A. Weiss, ISBN-10: 0321541405, Addison Wesley, 2010 (Recommended but not required)

Class attendance: Attendance is expected. Whether you come to class or not, you are responsible for keeping up with what happens in class. If you miss a class (other than for illness or an emergency), it is not reasonable for you to expect me to repeat just for you the material that was covered in the class that you missed. This applies both to the content of the class as well as to announcements about class policies, events, deadlines, or whatever.

Programming Lab and Software. You will use your own computer for assignments. Make sure you have Java 8 installed, as this is the SDK version we will use when running your program. If you don't have access to a computer or one that supports this version of the SDK, please come talk to the instructor or TAs. If your program doesn't compile, you may lose points even if it runs correctly on some other compiler.

Piazza

This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza.

Find the class page at: <https://piazza.com/utexas/fall2019/ee422cethomaz/home>

Schedule

Week	Topic	Recitation	Assignment
Aug 29th	Course Overview	Meet TA, Logistics	
Sept 3 & 5	Java Basics I; Java Basics II	Assignment 1 discussion, Github, and More Java Dev Env Essentials	Assignment #1 (Due September 12th)
Sept 10 & 12	Guest Lectures	Assignment 2 discussion, Interview questions, Algorithms, Visits of students who went on internships	Assignment #2 (Due September 26th)
Sept 17 & 19	OOP I; OOP II	OOP Fundamentals	
Sept 24 & 26	ADT/Interfaces; Interfaces/Generics	Assignment 3 discussion, BST, DST	Assignment #3 (Due Oct 10th)
Oct 1 & 3	JCF (List/Iterator/Stack); JCF (Queue/Set/Map/ Hash)	Catchup Recitation/ Open	
Oct 8 & 10	Exceptions; Fault Tolerance	Pre-Midterm Review	

Week	Topic	Recitation	Assignment
Oct 15 & 17	Midterm; Design Patterns	Assignment 4 discussion, Post- Midterm Solutions	Assignment #4 (Due Oct 31st)
Oct 22 & 24	Threads and Concurrency; Networking	Networking and troubleshooting, multi-thread demo	
Oct 29 & 31	Algorithms I; Algorithms II	Assignment 5 discussion, Setting up an android environment	Assignment #5 (Due Nov 14th)
Nov 5 & 7	Android Development	GUI practice and development	
Nov 12 & 14	Android Development	Practical apps (maybe talk about or demo one of the wearables)	Assignment #6 (Due Dec 5th)
Nov 19 & 21	Databases; Machine Learning	Further topics and examples in Machine Learning	
Nov 26 & 28	Open Topic; Thanksgiving Holiday		
Dec 3 & 5	Open Topic; Final Review	Final Review	

Assignments

The assigned class work in this course will consist of programming assignments. Programming is a discipline that you learn by doing, not by listening to a lecturer. Therefore, doing the programming assignments is crucial to performing well in this class. If you are having considerable difficulty with the early assignments, this is a sign that you may be in over your head - you should come see me immediately. The assignments will

require a substantial time commitment. Be sure to budget sufficient time to complete assignments before the deadline.

At the time you submit each assignment for grading, you are **highly encouraged** to commit your final version to **Git**. This will be crucial in cases where your program gets lost, your computer gets corrupted, or if there is some dispute over what was turned in when. It is also recommended that you commit your latest incremental version at the end of each working day on the assignment. If you cannot finish an assignment on time, then submit whatever you have finished before the deadline to receive some partial credit.

Late Assignments: Late deliverables will be accepted for one week after their due date, but at a penalty of 20 points. Afterward, the assignments will receive a 0. In the interest of fairness, there will not be any exceptions to this policy.

Programming assignments should be submitted for grading by using the Canvas assignment submission feature. Program assignment submission rules:

1. Submit the completed files (usually a .zip of all the .java files) that form your program to the assignment feature on the canvas page for this course. Make sure all files are in the base directory of the zip and are part of the correct package. You can submit until the deadline. We will consider the last one submitted.
2. Do not email files to the professor or to your TA unless you have been previously given permission to do so (and this will only happen in the case of some emergency)
3. As part of the required documentation header block, the top three lines of the file that is submitted should be comments with the following information:

```
// your name - last name, first name  
// your student EID  
// EE422C-Assignment  $n$  - where  $n$  is the assignment number (1, 2, ...)
```

Assignment grading criteria may vary on each assignment. **However, in general, programs that do not compile correctly on the Lab configuration will receive no more than 25% of the possible points.** Larger point deductions are given for such things as: incorrect output/results, missing features, bad design logic, poor style, etc. In addition the following criteria are important: (i) a block structured design should be evident; (ii) comments and/or appropriate variable names should be used to make your program readable; (iii) appropriate prompts and messages for input and output should be given to the user of your program. For consistency, each assignment is graded according to a defined rubric applied uniformly to all students.

Unless stated otherwise, more emphasis will be placed on program clarity than on program length, speed or size. Appeals for assignment re-grades will not be honored unless you have evidence of a grading mistake (see grade disputes below for deadlines).

Exams

Exams will cover material from lecture, assignments, and any assigned readings. Exams will be cumulative, although they will be more heavily weighted towards material not yet tested. Programming is a cumulative discipline, so it is important to master earlier topics in order to understand later topics. Exam scores may be curved if the instructor believes it is warranted. The exams will be given in class. If your work or a personal situation forces you to unexpectedly miss exams, you should expect to get a zero on those occasions. If you miss an exam because of illness, you are expected to provide a statement from a doctor stating that, in his/her opinion, it was impossible for you to attend because of illness. A slip showing you visited the UT Health Center or your personal doctor is not sufficient for this. In any other situation, you should contact me beforehand. Bring your student ID to the exam; it may be requested for proof of identity. Exams turned in for re-grading will be completely re-graded to find all grading mistakes.

Grading

The following table represents how you will demonstrate your learning and how we will assess the degree to which you have done so.

Component	Tentative Dates	Weight
Midterm	Oct 15th	20%
Final Exam	TBD	20%
Assignments	6 assignments throughout the semester	60%

Grade Disputes and Corrections: If you are dissatisfied with a grade you receive, you must submit your complaint briefly in writing or by email, along with supporting evidence or arguments, to your TA within one week of the date that I (or the TA) first attempted to return the exam or assignment results to you. For programming assignments the dispute period starts with the posting of your score on the class Canvas gradebook page. Complaints about grades received after the one-week deadline will be considered only if there are extraordinary circumstances for missing the deadline (e.g. student hospitalization). No new disputes will be accepted after 11:59AM three days before the course grade sheets must be turned in.

The grade you are given, either on an individual exam or assignment or as your final grade, is not the starting point of a negotiation. It is your grade unless a concrete grading

error has been made. Do not come to see me or the TA to ask for a better grade because you want one or you "feel you deserve it". Come only if you can document a specific error in grading or in recording your scores. Errors can certainly be made in grading, especially when large classes of many students are involved. But keep in mind that the errors can be made either in your favor or not. So it's possible that if you ask to have a piece of work re-graded your grade will go down rather than up.

Remember that the most important characteristic of any grading scheme is that it be fair to everyone in the class. Keep this in mind if you're thinking of asking, for example, for more partial credit points on a problem. The important thing is not the exact number of points that were taken off for each kind of mistake. The important thing is that the number was the same for everyone. So it may not be changed once the grading is done and the exams or assignments have been returned. If you have questions or concerns about any of your grades, contact your TA first, and if not satisfied with that interaction then contact me during office hours or via email.

Grading Policies

<u>Final Average</u>	<u>Letter Grade</u>
90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
0 - 59	F

A + or – may be given for special circumstances at the discretion of the professor.

Experiential Learning

This course includes a few activities that can be described as “experiential,” a type of active learning that engages you in your own decision-making about how to conceive, shape, and produce your project. The goal is to support you in making your own decisions about how to proceed and then ask you to reflect on the trajectory of your project. Did it go as you expected? What was unexpected? What did you learn? What did you learn doesn't work well? You have probably heard some of your teachers talk about learning from failure – I will evaluate the process of your doing and learning, not just the product. After all, once out of college or graduate school, you will have only yourself to guide your learning.

Class Policies

Absences: By UT Austin policy, you must notify the instructor of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must

miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence. For religious holy days that fall within the first two weeks of the semester, notice should be given on the first day of the semester. The notice must be personally delivered to the instructor and signed and dated by the instructor, or sent by certified mail, return receipt requested. Email notification will be accepted if received, but a student submitting such notification must receive email confirmation from the instructor. A student who fails to complete missed work within the time allowed will be subject to the normal academic penalties.

Student Rights & Responsibilities

- You have a right to an environment that supports mental and physical wellness.
- You have a right to respect.
- You have a right to be assessed and graded fairly.
- You have a right to freedom of opinion and expression.
- You have a right to privacy and confidentiality.
- You have a right to meaningful and equal participation
- You have a right to learn in an environment that is welcoming to all people.
- No student shall be isolated, excluded or diminished in any way.

With these rights come responsibilities:

- You are responsible for taking care of yourself, managing your time, and communicating with the teaching team and with others if things start to feel out of control or overwhelming.
- You are responsible for acting in a way that is worthy of respect and always respectful of others. Your experience with this course is directly related to the quality of the energy that you bring to it, and your energy shapes the quality of your peers' experiences.
- You are responsible for creating an inclusive environment and for speaking up when someone is excluded.
- You are responsible for holding yourself accountable to these standards, holding each other to these standards, and holding the teaching team accountable as well.

Personal Pronoun Preference

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your

request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

University Policies

Academic Integrity: Each student in the course is expected to abide by the University of Texas Honor Code: “As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.” Plagiarism is taken very seriously at UT. Therefore, if you use words or ideas that are not your own (or that you have used in previous class), you must cite your sources. Otherwise you will be guilty of plagiarism and subject to academic disciplinary action, including failure of the course. You are responsible for understanding UT’s Academic Honesty and the University Honor Code which can be found at the following web address:

<http://deanofstudents.utexas.edu/conduct/standardsconduct.php>

Q Drop Policy: If you want to drop a class after the 12th class day, you’ll need to execute a Q drop before the Q-drop deadline, which typically occurs near the middle of the semester. Under Texas law, you are only allowed six Q drops while you are in college at any public Texas institution. For more information, see:

<http://www.utexas.edu/ugs/csacc/academic/adddrop/qdrop>

University Resources for Students: Your success in this class is important to me. We will all need accommodations because we all learn differently. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we’ll develop strategies to meet both your needs and the requirements of the course.

Services for Students with Disabilities: This class respects and welcomes students of all backgrounds, identities, and abilities. If there are circumstances that make our learning environment and activities difficult, if you have medical information that you need to share with me, or if you need specific arrangements in case the building needs to be evacuated, please let me know. I am committed to creating an effective learning environment for all students, but I can only do so if you discuss your needs with me as early as possible. I promise to maintain the confidentiality of these discussions. If appropriate, also contact Services for Students with Disabilities, 512-471-6259 (voice) or 1-866-329- 3986 (video phone). On the web at:

<http://ddce.utexas.edu/disability/about/>

Counseling and Mental Health Center: Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone. There are many

helpful resources available on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner rather than later is often helpful. If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support.

<http://www.cmhc.utexas.edu/individualcounseling.html>

The Sanger Learning Center: Did you know that more than one-third of UT undergraduate students use the Sanger Learning Center each year to improve their academic performance? All students are welcome to take advantage of Sanger Center's classes and workshops, private learning specialist appointments, peer academic coaching, and tutoring for more than 70 courses in 15 different subject areas. For more information, please visit <http://www.utexas.edu/ugs/slc> or call 512-471-3614 (JES A332).

Other useful resources:

Undergraduate Writing Center: <http://uwc.utexas.edu/>

Libraries: <http://www.lib.utexas.edu/>

ITS: <http://www.utexas.edu/its/>

Student Emergency Services: <http://deanofstudents.utexas.edu/emergency/>

Important Safety Information: If you have concerns about the safety or behavior of fellow students, TAs or Professors, call BCAL (the Behavior Concerns Advice Line): 512-232-5050. Your call can be anonymous. If something doesn't feel right it probably isn't. Trust your instincts and share your concerns. The following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767, <http://www.utexas.edu/safety/>

Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.

Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.

Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class. In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

Link to information regarding emergency evacuation routes and emergency procedures can be found at: <http://www.utexas.edu/emergency>