

Introduction to Computer Science
CS 1301

Syllabus
MTWRF 9:30am-10:35am

Summer 2022
CCSB 1.0704

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Knowledge and Abilities Required Before Entering the Course: Students entering the course are not required to have a background in Computer Science or programming. They should be familiar with topics from Pre-calculus, including algebraic functions, proofs, and base representations of numbers.

Prerequisites: MATH 1508 or MATH 1411 with a grade of C or better.

Corequisites: CS 1101

Course Objectives: Students will learn to be active learners and understand the motivations for computing, basic concepts of algorithms, basic computer organization, and impacts of computing. They will develop problem-solving skills, implement solutions to computing problems in a high-level programming language, and build team skills, critical-thinking skills, and professionalism.

Topics covered this semester: The semester (8 weeks) will be structured in four phases:

- During the first phase, we will cover algorithms, abstraction, memory, and variables, including arrays. We will also go over conditionals and repetitions as they appear in our daily lives.
- In the second phase, we will introduce how conditionals and repetitions as loops can be used in algorithm design in Java, blending this with methods.
- During phase 3, we will introduce recursion and practice integrating the essential components presented in phases 1 and 2 with recursion.
- Finally, in our last phase, we will learn about user-defined-data types and introduce the use of linked lists.

Textbook: *Introduction to Java Programming, Comprehensive Version 10th Edition* by Y. Daniel Liang. We will skip some sections, as announced in class. The textbook is required at all class meetings.
Secondary Text: Introduction to programming in Java: an interdisciplinary approach by Robert Sedgewick and Kevin Wayne. Both of these books are available at our library.

Required Reading: Read each section that we cover in class, both before and after class. Skim the section before class, even if you do not understand it fully, to have some idea of what we will be doing in class. Read it more carefully after class to clarify and fill in details you missed in class.

Warning: Sometimes, we will not “cover” all the material from a section in class but instead focus on a particular aspect of the section. In such cases, I will point out in class which other parts of the section I expect you to read on your own.

Grading: Grades are communicated to students promptly. It is your responsibility to keep track of your grades by compiling the grades you receive. Your semester grade will be based on homework assignments, quizzes, class participation, three mid-term exams, and a final exam. The approximate percentages are as follows:

- 30% Homework

- 20% Quizzes
- 30% Exams (three partial exams and one final comprehensive exam)
- 20% Activities (includes on-time lecture attendance, active participation in class, completion of any quizzes for attendance and survey purposes).

The final comprehensive exam will be on

Friday, July 29th

The nominal percentage-score-to-letter-grade conversion for CS 1301 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

Note: Regardless of your standing in the class at that time, you need to earn a 65% or better at the final exam to pass the course. Additionally, you must make a C or better in these two courses, CS 1301 and CS 1101, to continue to the next course in this sequence, CS2401.

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

Students should be on time for all scheduled sessions and attend the entire session. However, we understand that there are attenuating circumstances during this pandemic; please contact me if we need to make accommodations in the delivery method.

It is then your responsibility to obtain the content covered during missed class(es). Participation points also include completing post-lecture and post-labs online quizzes (when requested) that are administered as surveys to monitor your overall progress and potential struggles.

Quizzes: The purpose of each quiz is to ensure that you are staying current with the weekly reading assignments and video lectures and to verify that you have acquired the skills developed in class. Quizzes are unannounced. There will be no make-up on missed quizzes.

Finally, there will be unannounced in-class assignments to be turned in either by the end of the class or within a short period after the class (details will be given for each assignment). There will be no make-up for missed in-class assignments. Grades of such assignments will weigh equally with grades from online quizzes.

Homework: Reading and homework assignments will be announced in class. If you miss a lecture session, it is your responsibility to find out what you missed. You should expect to spend at least four hours per week outside of lectures on reading and homework. Completing the assigned activities on time will be crucial to your success in the class (since these activities prepare you for classwork) and to get a good grade (since late completion will be penalized).

Exams: There will be three partial exams and one final exam. All four exams will weigh 65% of your overall final grade for CS1301. Because the exams contribute so heavily to your total grade, you must do well on them. If you have test-taking difficulties in general, or if you have difficulties with our tests in particular, please let me know as soon as possible and request appropriate accommodation from UTEP's Center for Accommodation and Students' Services

The purpose of the partial exams is to allow you to demonstrate mastery of course concepts covered thus far during the semester. Partial exams will occur during the regular lecture session and are tentatively scheduled to be held every two weeks. Make-up exams will be given only in highly unusual circumstances. Please contact an instructor BEFORE the exam if you must miss an exam.

The final exam will be comprehensive. You must score 65% or better on the final exam to pass this course. You must take the final exam during the time shown in the schedule for the lecture section that you usually

attend. Do not “drop-in” to another section: there will not be a copy of the exam for you. This is University policy. Contact your instructor in advance for accommodation if you have a scheduling conflict (e.g., taking a final at EPCC) or are scheduled for three final exams in one day. The final exam schedule is available online. It is the students’ responsibility to keep informed.

COVID-19 Accommodations: Students are not permitted on campus when they have a positive COVID-19 test, exposure, or symptoms. If you are not permitted on campus, you should contact me as soon as possible so we can arrange necessary and appropriate accommodations. (classes with on-campus meetings) According to CDC guidelines, students who are considered high risk and those who live with individuals regarded as high risk may contact the Center for Accommodations and Support Services (CASS) to discuss temporary accommodations for on-campus courses and activities.

ONLINE ETIQUETTE As we know, sometimes, communication online can be challenging. We can miscommunicate or misunderstand what our classmates mean, given the lack of body language and immediate feedback. Therefore, please keep this netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always considers audience. This is a college-level course; therefore, all communication should reflect polite consideration of others’ ideas.
- Respect and courtesy must be provided to classmates and the instructor. No harassment or inappropriate postings will be tolerated.
- When reacting to someone else’s message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. What is posted in these online spaces is intended for classmates and professors only? Please do not copy documents and paste them to a publicly accessible website, blog, or other space.
- Be reminded that some materials are subject to copyright, and violations are prosecuted, so be cautious about what you share!

Detailed Learning 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 describe, at a high level:

- The major advances in the history of computing
- The relation between computing and society, including social, ethical, and legal issues
- The importance of computing in a variety of professions: required knowledge and skill sets for major career options
- Classes of programming languages, including:
 - Imperative,
 - Object-oriented,
 - Declarative, and
 - Functional
- The purpose of multi-dimensional arrays (dimension three and above)
- The purpose of and relationship between classes and objects
- The purpose of pre/post conditions, in particular as related to verification
- Compilation and interpretation

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:

- Analyze problems, design and implement solution algorithms, including correct use of:
 - User-defined types and their implementation as classes
 - Basic string manipulation techniques using language functions, including:
 - * Traversing strings,
 - * Accessing characters,
 - * Comparing strings,
 - * Concatenating strings
- Algorithm-tracing techniques to ensure solution correctness, including method calls
- Use testing and debugging strategies to identify software faults by creating test suites that include:
 - Black-box test cases
 - Basic white-box test cases
- Use general software engineering principles, including abstraction and problem decomposition in problem and solution analysis
- Use informal pseudocode to describe algorithms
- Use 2D arrays
- Apply Binary arithmetic to solve problems. This includes:
 - Conversion between binary, decimal, and hexadecimal numbers,
 - Application of arithmetic operations on binary and hexadecimal numbers
- Use recursion for solving simple problems
- Use linked lists

Level 3 Outcomes: 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 use the syntax and semantics of a high-level language to express solutions to programming problems, including the correct pseudocode use of:

- Basic variable types including booleans, integers, real numbers, characters, strings
- 1-D arrays
- Assignment and arithmetic
- Logical propositions to define conditional and loop statements
- For-loops
- While-loops
- Methods/functions, parameter passing, return values
- Algorithmic building blocks, including
 - Min
 - Max
 - Average
 - Summation
 - Linear search

Policies

Academic dishonesty: It is UTEP's policy, and mine, for all suspected cases or acts of alleged academic dishonesty to be referred to the Office of Student Conduct and Conflict Resolution for investigation and appropriate disposition. See Section II.1.2.2 of the Handbook of Operating Procedures.

Attendance: You are strongly encouraged to attend a class every day. I expect you to arrive for class on time and remain seated until the class is dismissed. Students who have six or more absences (excused or unexcused) or have demonstrated a lack of effort will be dropped from the course with a grade of "F". You are responsible for finding out any assignment that must be made up if you are absent. My goal is for class meetings and activities to complement, rather than echo, the textbook, thus for every class to be worth attending.

Drop date: The deadline for student-initiated drops with a W is **Friday, July 22nd**. After this date, you can only drop with the Dean's approval, which is granted only under extenuating circumstances. I hope everyone will complete the course successfully, but if you have doubts about your progress, I will be happy to discuss your standing in the course to help you decide whether or not to drop. You are only allowed three enrollments in this course. Students enrolled after Fall 2007 are only allowed six withdrawals in their entire academic career, so please exercise the drop option judiciously.

Courtesy: We all have to show courtesy to each other and the class as a whole during class time. Please arrive to class on time (or let me know when you have to be late and why); do not engage in side conversations when one person (me or another student) is talking to the whole class; turn off your cell phone (or, for emergencies, at least set it not to ring out loud), and do not engage in the phone, email, or text conversations during class.

Disabilities: If you have, or suspect you have, a disability and need an accommodation, you should contact the Center for Accommodations and Support Services (CASS) at 747-5148, cass@utep.edu, or Union East room 106. You are responsible for presenting to me any CASS accommodation letters and instructions.

Exceptional circumstances: If you anticipate the possibility of missing large portions of class time due to exceptional circumstances such as military service and training or childbirth, please let me know as soon as possible.

Concept Map:

