

Discrete Structures I
CS 1190**Syllabus**
TR 3:00pm to 4:20pm**Spring I 2020**
HUDS 100**Instructor:** Julio César Urenda Castañeda

Office: Library 504

Hours: MW 1:30pm to 2:30pm (tentative) or by appointment

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Prerequisites: MATH 1508 with a grade of C or better.**Course Objectives:**

Upon successful completion of the course, you will use the basic algebra of sets and logic. You will categorize binary relations. Also, you will know the basic properties of arbitrary functions. You will be familiar with induction and recursion, and their relevance to computer program analysis.

You will relate to counting problems in computing. In particular, you will apply recurrence relations to model problems on algorithm complexity.

In this class, I expect that you become an active learner, and develop an understanding of the essential connections/relevance of the content of this course with their computer science education.

Finally, you will develop team-working skills, critical-thinking skills, and professionalism.

Textbook

Discrete Mathematics by Zybooks. To subscribe to your textbook, please follow the instructions below:

1. Sign in or create an account at learn.zybooks.com
2. Enter zyBook code: UTEPCS1190UrendaSpring2020
3. Subscribe

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 in a timely manner. It is the students' responsibility to keep track of their grades by compiling the grades they receive. Your mini-mester grade will be based on a combination of homework assignments, weekly quizzes, class participation, one midterm exam, and a final exam.

- 30% Homework
- 20% Quizzes
- 45% Exams (1 mid-term exam and 1 final exam)
- 5% Class participation (includes on-time lecture attendance, active participation in class, completion of any quizzes for attendance and survey purposes)

The nominal percentage-score-to-letter-grade conversion for CS 1190 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

Expectations

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. Attendance will be taken at every session (at first you will have to sign in but as time goes the instructor will know you and mark you present without your help) and will count towards your class participation grade. Students should notify the instructor prior to missing a session if at all possible, and certainly right after if earlier was not possible. The instructor will allow two unexcused absences per semester before having the option to deduct points from the final grade (5 points per subsequent unexcused absence). It is the student's 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 students' overall progress and potential struggles.

Quizzes: The purpose of each quiz is to ensure that students are staying current with the weekly reading and homework assignments, and to verify that they have acquired the skills developed in class. Quizzes will be administered approximately once a week. There will be no make-up on missed quizzes.

Homework: Reading and homework assignments will be announced in class and/or posted on piazza (under the Homework section of Resources). If you miss a lecture session, it is your responsibility to find out what you missed. You should expect to spend at least two hours per week outside of lecture on reading and homework assignments and reviews. Most of your homework will be work assigned on your online zybook: completing the assigned activities on time will be crucial to your success in the class (since these activities prepare you for classwork) and to getting a good grade (since late completion will be penalized).

Exams: There will be one midterm exam and one final exam. These exams together will weigh 50% of your overall final grade for CS1190. Because the exams contribute so heavily to your total grade, it is vital that you do well on them. If you have test-taking difficulties in general or if you have difficulties with our tests in particular, please come and let me know as soon as possible and/or request appropriate accommodation from UTEP's Center for Accommodation and Students' Services. The purpose of the midterm exam is to allow you to demonstrate mastery of course concepts covered thus far during the semester. The mid-term exam will take place during the regular lecture session and is tentatively scheduled around half of the minimester. Make-up exams will be given only in extremely unusual circumstances. If you must miss an exam, please meet with an instructor, BEFORE the exam. The final exam will be comprehensive. You must score 65% or better on the final exam to pass this course. If you have a scheduling conflict (e.g., if you are taking a final at EPCC) or if you are scheduled for three final exams in one day, see your instructor in advance for accommodation, before the end of the minimester. The final exam schedule is available online. It is the students' responsibility to keep informed.

Policies

Academic dishonesty: It is UTEP's policy, and mine, for all suspected cases or acts of alleged scholastic 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.

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 to not ring out loud), and **do not** engage in 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/or training, or childbirth, please let me know as soon as possible.

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:

1. Counting and its relevance to computer science

2. Recurrence relations

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:

1. Logical reasoning for propositional logic: truth tables.
2. Predicate logic, including writing predicate logic expressions and basic reasoning: translation and inference rules.
3. Sets and functions: union, intersection, complement and product; injective, surjective and bijective functions; and combinations and permutations.
4. Induction and recursion: construct recurrence relations and basic proofs by mathematical induction.

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 higher-level language to express solutions to programming problems, including the correct use of:

1. Propositional logic: propositions and operators, evaluation of propositions, conditional statements, and logical equivalence
2. Induction and recursion: identify problems that can be modeled by recurrence relations hypothesize and prove new properties.