Discrete Structures II	**Syllabus**	**Summer 2022**
CS 2202	MW 3:40 pm-4:40 pm	CCSB 1.0202

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

Course Objectives:

Upon completing the course, you apply the fundamental counting techniques. You will identify and model problems with graphs and trees. You will reinforce your familiarity with induction and recursion and their relevance to computer science. Also, you will understand why knowing how to model problems using graphs and trees is crucial in many computer science areas.

In this class, students will be expected to be active learners and develop an understanding of the essential connections/relevance of the content of this course with their computer science education.

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

Textbooks

Discrete Mathematics an Open Introduction by Levin 3rd Ed. is freely available; see this link. *Discrete Mathematics and its Applications by K. Rosen, 7th Ed.* This book is available in our UTEP library. For example, affordable copies may also be found on Amazon or among students already taking the course.

Grading

Grades are communicated to students promptly. It is the students' responsibility to keep track and compile them. Your semester grade will be based on homework assignments, quizzes, class participation, one partial exam, and a final exam.

- 30% Homework
- 20% Quizzes
- 45% Exams (2 partial 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 2101 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 by, 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 before missing a session and right after if earlier is not possible. The instructor will allow two unexcused absences per semester before having the option to deduct points from the final grade (5 issues 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) administered as surveys to monitor students' overall progress and potential struggles.

Quizzes: Each quiz aims to ensure that students stay current with the weekly assignments and 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: Homework assignments will be announced in class. If you miss a lecture session, you must find out what you missed. You should expect to spend at least two hours per week outside of lectures on reading and homework assignments and reviews: 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 one midterm and final exam. These exams together will weigh 45% of your overall final grade for CS 2101. 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 come and let me know as soon as possible and 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 for around half of the term. Make-up exams will be given only in highly 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., taking a final at EPCC) or are scheduled for three final exams in one day, see your instructor in advance for accommodation before the end of the term. The final exam schedule is available online. It is the students' responsibility to keep informed.

Technology Requirements Ensure your UTEP e-mail account is working and you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need access to a computer/laptop, scanner, webcam, and a microphone. You will need to download or update the software: Microsoft Office, Adobe Acrobat Reader, Windows Media Player, QuickTime, and Java. Check that your computer hardware and software are up-to-date and can access all course parts.

Suppose you do not have word-processing software. In that case, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook, and more) for free via UTEP's Microsoft Office Portal. Click the following link for more information about Microsoft Office 365 and follow the instructions.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, don't hesitate to get in touch with the UTEP Help Desk, as they are explicitly trained in assisting with the technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

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.

Class Recordings: The use of recordings will enable you to have access to class lectures, group discussions, and so on in the event you miss a synchronous or in-person class meeting due to illness or other extenuating circumstances. Using such technology is governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP's acceptable-use policy. A recording of class sessions will be kept and stored by UTEP by FERPA and UTEP policies. Your instructor will not share the recordings of your class activities outside of course participants, including your fellow students, teaching assistants, graduate assistants, and any guest faculty or community-based learning partners with whom we may engage during a class session. You may not share recordings outside of this course. Doing so may result in disciplinary action.

COVID-19 Precautions: Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you feel unwell, please let me know as soon as possible so we can work on

appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu so that the Dean of Students Office can support you and help communicate with your professors. The Student Health Center is equipped to provide COVID 19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.

ONLINE ETIQUETTE As we know, sometimes, communication online can be challenging. It's possible to 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 consider the 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 at all times. 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. Whatever 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!

Courtesy: We all have to show courtesy to each other and the class during class. Please arrive at 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.

Course Resources: UTEP provides a variety of student services and support:

- Technology Resources

- 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, email, chat, website, or person if on campus.

- Academic Resources

  - 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.

  - University Writing Center (UWC): Submit papers here 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.

  - History Tutoring Center (HTC): Receive assistance with writing history papers, get help from a tutor and explore other history resources.

  - RefWorks: A bibliographic citation tool; check out the RefWorks tutorial, Fact Sheet, and Quick-Start Guide.

- Individual Resources

- Military Student Success Center: Assists personnel in any branch of service to reach their educational goals.
- Center for Accommodations and Support Services: Assists students with ADA-related accommodations for coursework, housing, and internships.
- Counseling and Psychological Services: Provides various counseling services, including individual, couples, and group sessions, as well as career and disability assessments.

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. Identify types of graphs and trees appearing in computer science.

2. State the main counting theorems.

Level 2: Application and Analysis. Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., work on a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able:

1. Articulate what counting is and how relevant it is to computer science

2. Apply the basic principles of counting.

3. Model combinatorial problems using graphs and trees.

4. Describe various types of graphs and their common properties.

5. Identify trees as a fundamental structure in modeling computer science problems.

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. Reason about the complexity of algorithms using counting techniques and properties of graphs

2. Model computer science problems using graphs and trees

3. Lay out a proof plan for existential and universal proofs, be able to identify shortcomings of some types of proving strategies

4. Identify an inductive structure of a set: use it to conduct an inductive proof and set a recurrence relation.

Concept Map:

Discrete Structures II