MATH 2300: Discrete Mathematics

CRN: 16131

Fall 2022

Liberal Arts, room 303

Mondays, Wednesdays, 10:30-11:50

3 credit hours

Instructor: Dr. Art Duval

Office: Bell Hall, room 303

Phone:
(915)747-6846/office: 24 hours/day; if I'm not in, please leave a message.

(915)747-6502/fax: Include a cover sheet with my name, please.

(915)545-1788/home: 9am-9pm only, please.

Internet: aduval@utep.edu,
http://www.math.utep.edu/Faculty/duval/home.html

Office hours:

- Mondays, 1:00-3:00
- Wednesdays, 1:00-3:00

Please feel free to come by my office any time during scheduled office hours. You are welcome to visit at other times, but in that case you might want to make an appointment, just to make sure that I will be there then. You can make an appointment simply by calling me, or by sending e-mail. You can just propose a time, and I will respond either by agreeing to that time, or, if I cannot make it then, I will propose different times.

Alternatively, you can talk with me by Zoom at [an address given during class or on Blackboard] during office hours or by appointment.

You may also ask any questions directly via phone or e-mail. If I'm not in when you call, please leave a message on the voice mail or answering machine with your name, number, and a good time for me to call you back. I will try to respond to your phone or e-mail message as soon as possible.

Prerequisite: Calculus I (MATH 1411)

This is entirely a mathematical maturity requirement, as we will use no calculus in this course.

Course Objectives

Upon successful completion of the course, you will know and be able to use the basic algebra of sets and of logic. You will be able to identify and use common classes of relations. You will know basic properties of arbitrary functions. You will be able to solve counting problems involving combinations and permutations, including counting problems with restrictions. You will know the basic definitions and

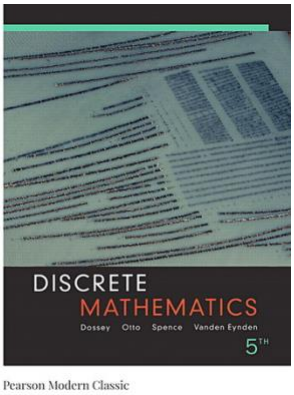
theorems of graph theory, and be able to apply them to specific graphs. You will know the basic algorithms for traversing trees, and be able to apply them to specific trees.

Note that this class will probably be quite different from other math classes you have taken, in at least two important ways. First, in contrast to calculus and related courses, the objects under consideration are (as the course title suggests) discrete, not continuous. This has the advantage that you can often explicitly list all the pieces (try listing all the function values of a continuous function!), but the disadvantage of not having continuity to "tie" things together nicely. Second, although there is still a lot of problem-solving, the problems and their answers have a very different flavor: the problems are not equations to be solved, and the answers often aren't even numbers. We also may spend more time explaining why a particular solution works than in finding the solution.

Required Materials

Textbook: Discrete Mathematics, 5th edition, by Dossey, Otto, Spence, and Vanden Eynden (Pearson). We will discuss Chapters 2, 4, 5, 8, and Appendix A. All other material in the course will be aligned to the textbook.

Technology Requirements



Blackboard: Announcements, assignments, and course grades are all delivered via the Internet through the Blackboard learning management system (LMS). Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Mozilla Firefox and Google Chrome are the most supported browsers for Blackboard; other browsers may cause complications with the LMS. When having technical difficulties, update your browser, clear your cache, or try switching to another browser. Check for announcements on Blackboard, or via your UTEP e-mail account (where announcements will also be sent), at least once per day.

Gradescope: We will be using Gradescope on quizzes and exams, which allows us to provide fast and accurate feedback on your work. Grades and feedback will be returned through Gradescope, which you will access via Blackboard. As soon as grades are posted, you will be notified immediately so that you can log in and see your feedback. Grades (but not feedback) will also be posted on Blackboard. More support for Gradescope can be found here.

Recommended Homework

I will post recommended homework problems from the textbook for (almost) every day in class. Much of our class time will be spent by students sharing solutions to these problems to the class. It is very important that you do your homework before we discuss it in class. You will only learn the material by doing it yourself, and not by only watching other people do it for you.

You will probably not be able to solve all the homework problems, and that is okay. If you did not completely solve a problem, you can share what you tried and how it worked. These situations often lead to the best discussions.

GRADES

Quizzes (16.7%)

There will be approximately weekly quizzes, with problems taken from the homework. Quizzes are closed-book, closed-notes. Missed quizzes cannot be made up, but your two lowest quiz scores will be dropped.

Exams

There will be three exams during the semester, and a comprehensive final exam. All exams are closed-book and closed-note, with no calculators allowed.

Once you begin an exam, you will not be allowed to leave the classroom until you have finished the exam. There will be no bathroom breaks. If you have a medical reason for needing more frequent bathroom breaks, please provide documentation in advance.

Make-up exams will only be given under extraordinary and unavoidable circumstances, and with advance notice if possible. You will need to provide written documentation. If you anticipate a conflict with any exam date, please contact me as soon as possible. Otherwise, please make space on your calendar right now for all exams.

In-class Exams (16.7% each)

- Exam 1, Chapter 2, **Wednesday, September 28**
- Exam 2, Chapter 8, **Wednesday, October 19**
- Exam 3, Chapters 4 and 5, **Monday, November 21**

Final Exam (33.3%)

Friday, December 9, 10:00 a.m. – 12:45 p.m.

Grading scale

All exam grades will be converted to a scale where 4 is the minimum score for an A, 3 is the minimum score for a B, 2 is the minimum score for a C, and 1 is the minimum score for a D.

POLICIES

Attendance

I strongly encourage you to attend every class you can (but stay home if you are sick), though there is no particular grade penalty for absences. You are responsible to find 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, and thus for every class to be worth attending.

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.

Scholastic Integrity

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as one's own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. I report all suspected violations of academic integrity to the Office of Student Conduct and Conflict Resolution (OSCCR) for investigation and possible disciplinary action. To learn more, see HOOP: Student Conduct and Discipline.

Copyright Statement for Course Materials

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.

Student Resources

UTEP provides a variety of student services and support:

- Math Tutoring Center (MaRCS): Ask a tutor for help and explore other available math 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.
- 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 in person if on campus.
- University Writing Center (UWC): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- Military Student Success Center: UTEP welcomes military-affiliated students to its degree programs, and the Military Student Success Center and its dedicated staff (many of whom are veterans and students themselves) are here to help personnel in any branch of service to reach their educational goals.

Drop Policy

To drop this class, please contact the Registrar's Office to initiate the drop process, by the deadline of Friday, October 28, 2021. After this date, you will not be able to drop the class (as per the Dean's office). Furthermore, a grade of incomplete is only for extraordinary circumstances, such as a missed exam.

I hope everyone will complete the course successfully, but if you are having 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, and only six withdrawals in your entire academic career, so please exercise the drop option judiciously.

Accommodations Policy

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs,

services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. If you have, or suspect you have, a disability and need an accommodation, you should contact UTEP Center for Accommodations and Support Services (CASS) at (915)747-5148 or cass@utep.edu, or apply for accommodations online via the CASS portal. You are responsible for presenting to me any CASS accommodation letters and instructions.

Exceptional Circumstances

If you anticipate the possibility of not being able to participate in the course due to exceptional circumstances such as military service and/or training, childbirth, etc., please let me know as soon as possible.

COVID-19 Precautions

If you are sick, stay home! Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that 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 provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing (see below).

Vaccines. The best way that Miners can take care of Miners is to get the vaccine, which is now widely available for free in the El Paso area. Learn more at epcovidvaccine.com.

Masks. At our current level of disease and hospitalization in El Paso, the Centers for Disease Control and Prevention (CDC) recommends wearing masks while indoors in a public setting.

Testing. UTEP is offering two convenient options for free COVID-19 testing on campus. For more details, see https://www.utep.edu/ehs/covid/.

Current UTEP students have access to **free on-campus testing in the UTEP Student Health and Wellness Center** located in Union Building East, first floor.

Students, employees and the general public can pull up to the City of El Paso's COVID-19 Mega-Testing Site on UTEP property **at 3333 N. Mesa at Kern Drive.** This public site includes a dedicated priority lane for Miners and their household members, as well as lanes for the general public.