

CSC-400 Discrete Structures for Computer Science Winter 2022-23

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Office Hours (in person/Zoom): Tuesday 11:45-1:15 & Thursday 4:00-5:30

Course Website: <https://d2l.depaul.edu/>

Course Description

This course introduces the basic mathematical tools and background essential for studying computer science. The topics to be discussed include: logic and set theory, relations and functions, counting and basic probability, and graph theory.

Prerequisites

None.

Textbook and Materials.

Eric Lehman, F. Thomson Leighton and Albert R. Meyer, *Mathematics for Computer Science*. The textbook and other materials are publicly available for download at:

<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-spring-2015/>

A link to the textbook is uploaded on D2L (under the tab “Content”). We will be using the slides prepared by one of the authors of the textbook (Albert Meyer).

Problem-Solving Sessions

There will be weekly problem solving sessions held every Friday from 10:30 AM -12:00 PM (noon), starting on Friday 1/6 and ending on Friday 3/10. The location/room of these meetings will be announced later. The sessions will be run by Brandon Meng, a Ph.D. student at CDM, and will enforce the concepts discussed in the lectures by going over a set of practice problems and their solutions. These sessions will be recorded via Zoom and will be available under the Zoom tab on the course's webpage. Attendance of these sessions may be used by international students to fulfill the on-campus enrollment requirement.

Attendance

Attendance is not mandatory. If you miss a lecture, then you will be responsible for the materials covered during that lecture.

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted in D2L and sent via email.

COVID-19 Health and Safety Precautions

Keeping our DePaul community safe is of utmost importance. Students, faculty and staff are expected to abide by DePaul's health and safety guidelines and by the City of Chicago Emergency Travel Advisory. By doing these things, we are Taking Care of DePaul, Together. The recommendations may change as local, state, and federal guidelines evolve. Students who do not abide by the requirements may be subject to the student conduct process and will be referred to the Dean of Students Office. Students who have a medical reason for not complying with any requirements should register with DePaul's Center for Student with Disabilities (CSD).

Respect for Diversity and Inclusion

At DePaul, our mission calls us to explore "what must be done" in order to respect the inherent dignity and identity of each human person. We value diversity because it is part of our history, our traditions and our future. We see diversity as an asset and a strength that adds to the richness of classroom

learning. In my course, I strive to include diverse authors, perspectives and teaching pedagogies. I also encourage open dialogue and spaces for students to express their unique identities and perspectives. I am open to having difficult conversations and I will strive to create an inclusive classroom that values all perspectives. If at any time, the classroom experience does not live up to this expectation, please feel free to contact me via email or during office hours.

Grading

- *Assignments (5-6 assignments)—30%*

Homework assignments are due on the specified due date and time. Late submissions will not be accepted. You should double check your submission on D2L to make sure that you submitted the correct file; **NO** resubmission due to submitting the incorrect/incomplete file will be accepted.

- *Midterm Exam—30%*

In-Class Students. The midterm exam is on Thursday, February 9th, from 5:45-7:45 PM (during regular class hours), in class. No make up exams will be given. The exam is open book. Electronic devices and internet access are not allowed.

Online/ASync Students. You will need to take a proctored exam at an approved testing facility (university, library, etc.) or at CDM; no online exams will be given. You will need to register through My-CDM/D2L to take your proctored exam during a time window that is specified in the registration system; no make-up exams outside of this time window will be given. The duration of the midterm exam is two hours (120 minutes). Please register as soon as possible. Please note that you will need to meet the University's vaccination requirements in order to take your proctored exams. The exam is open book. Electronic devices and internet access are not allowed.

- *Final Exam—40%*

In-Class Students. The final exam is on Thursday, March 16th, from 5:45 - 8:15 PM (in class). No make-up exams will be given. The

exam is open book. Electronic devices and internet access are not allowed.

Online/ASYNCH Students. You will need to take a proctored exam at an approved testing facility (university, library, etc.) or at CDM; no online exams will be given. The duration of the exam is two hours and 30 minutes (150 minutes). You will need to register through My-CDM/D2L to take your proctored exam during a time window that is specified in the registration system; no make-up exams outside of this time window will be given. Please register as soon as possible. Please note that you will need to meet the University's vaccination requirements in order to take your proctored exams. The exam is open book. Electronic devices and internet access are not allowed.

Topics

1. Propositional and predicate logic (modules 1 & 3).
2. Sets (module 4).
3. Relations and functions (modules 4 & 8 & 10).
4. Graphs (modules 10 & 12 & 13).
5. Counting and probability (modules 15 & 17 & 18).
6. Mathematical induction and proofs if time permits (modules 2 & 5).

Plagiarism

All assignments and the final exam must be done on **YOUR OWN**. You are strictly prohibited from using any source other than the text and the lecture notes when working on the homework and final exam problems. In particular, you are strictly forbidden from acquiring hints and/or solutions from the internet or from any other external resource or person (besides the instructor). Copying is strictly forbidden. Scholastic dishonesty includes acquiring answers from any unauthorized source, working with another person, observing the work of other students during any exam, providing answers when not specifically authorized to do so, and informing any person of the contents of an exam prior to the exam. Disciplinary actions range from

grade penalty to expulsion. Please refer to the school policy on plagiarism for more specific details.

Learning Outcomes

- Students will learn the basic discrete mathematics background essential for studying computer science.
- Students will be exposed to the mathematical language/formalism necessary for reasoning logically and for presenting their arguments rigorously.
- Students will be able to use basic mathematical tools for modeling and solving problems in computer science.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu

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Course Evaluation: School Policy

Course and instructor evaluations are critical for maintaining and improving course quality. Please complete the evaluations at the end of the quarter.