

# Math 140 - Discrete Mathematics I

## Course Syllabus

### Fall 2021

Instructor : Dr. Edward Burkard  
E-mail : eburkar1@depaul.edu  
Office : Schmitt Academic Center 530D  
Office Hours : MW 12-1pm (Lewis 1655, in-person)  
: TR 5-6pm (on Zoom)  
Meeting ID: 984 4291 3433 Password: 140140  
: and by appointment

#### Section 401

Class Time : MW 10:10-11:40am  
Class Location : Lewis 1007, Loop Campus

#### Section 403

Class Time : MW 3:10-4:40pm  
Class Location : Lewis 1007, Loop Campus

#### Section 404

Class Time : TR 3:10-4:40pm  
Class Location : Lewis 1007, Loop Campus

Course Webpage : <https://edwardburkard.com/?page=Teaching/140F21>  
(Lecture notes will be posted here)

## 1. COURSE DESCRIPTION

Combinatorics, graph theory, propositional logic, singly-quantified statements, operational knowledge of set theory, functions, number systems, methods of direct and indirect proof.

## 2. COURSE GOALS

Math 140 and 141 are intended to provide a solid foundation for the further study of mathematics, programming languages, database theory, data structures, and the analysis of algorithms. Math 140 introduces basic principles of logical reasoning and shows how to apply them to explore the truth or falsity of elementary statements in mathematics and computer science. Specific topics include combinatorics, graph theory, sets, functions, and various number systems. A primary goal of the course is for students to learn to express solutions and arguments with clarity and precision.

## 3. COURSE EXPECTATIONS

Discrete math will be a new experience in mathematics for most of you, and will challenge you to think about math in a new way! I hope this will excite you and motivate you to do your best! In my experience, the statement “I cannot do math” and ones like them are flat

out false. For some of you, it may come more easily than others, but this does not mean anyone is innately bad at math (in fact, research backs this up!). What I will ask of you in this class is to give it your best effort and practice regularly and to be an active and engaged learner. As one of my former teachers would say, “Math is not a spectator sport; you will learn only by doing!” Being stuck on a problem/topic is a natural part of learning and you should not let this get you down! Making mistakes and learning what not to do is just as valuable as learning what to do, if not even moreso!

## 4. COMMUNITY EXPECTATIONS DURING COVID

We will meet in-person for these classes. While we believe the learning experience is enhanced by attending class in person, we recognize that we are still living in the midst of a global pandemic and that keeping our DePaul community safe is of utmost importance. The health and safety of everyone at DePaul depend on the cooperation of all who come to campus. By taking care of yourself, you protect the entire community. In particular, face masks are required for everyone inside a campus building, regardless of vaccination status; everyone is expected to refrain from eating and drinking in classrooms; and everyone should stay home if sick.

4.1. **Masks.** Face masks are required for everyone inside a campus building, regardless of vaccination status. Face masks should be worn so that they **cover both the nose and the mouth**. If a student comes to class without a mask on, they will be asked to put one on. If a student refuses to wear a mask in class, they will be asked to leave. If a student refuses to leave under these circumstances, Public Safety will be notified and the student will be referred to the Dean of Students Office for disciplinary action.

4.2. **Attendance.** We are living through a pandemic. The health and safety of you and others comes first. Under normal circumstances we would expect regular class attendance, however in these uncertain times I trust each of you to use your best judgement to keep you and those around you safe, and to attend our class when it makes sense to do so. If you cannot make it to class, please get notes from a classmate or talk to me ASAP to find out what you missed! Our classroom is also Zoom enabled so that I am able to share the writing on the board with the meeting, so if you cannot make it to class because you’re not feeling well, please try to come to the class through Zoom if you can! The link to the class Zoom meeting is on D2L.

## 5. TEXTBOOK AND HOMEWORK SYSTEM

For this class, we will use the textbook *Discrete Mathematics with Applications*, 5th edition, by Susanna Epp. The accompanying online homework system, WebAssign, will be required for the course and includes access to a digital copy of the textbook. You can purchase WebAssign access through the site <https://www.webassign.net>. My recommendation is to use the trial access and not actually purchase access until the trial period is close to over (you get 2 weeks of trial access) in case your schedule changes in the first couple weeks of the quarter. While this access isn’t as cheap as we would hope, the good news is that the same access you purchase for this class should work if you continue on to Math 141 next semester! You do not need to buy a physical copy of a textbook, though if you would

like to, I suggest trying to find a cheaper old edition. To sign up for our class, use the Class Key: **depaul 2971 5846**. Feel free to ask if you need any help signing up for WebAssign!

## 6. TENTATIVE COURSE OUTLINE

This is a very rough outline of the sections of the book that we will cover. We will not cover every single detail of all of these sections, but we do still have a good deal of material to cover!

Week of	Class 1	Class 2
Sept. 6	—	Intro, 2.1, 2.2
Sept. 13	2.2, 2.3	2.5
Sept. 20	1.1, 1.2	3.1, 3.2
Sept. 27	Catch-up	4.1
Oct. 4	4.2	4.7
Oct. 11	9.1, 9.2	9.2, 9.3
Oct. 18	10.1	10.2
Oct. 25	10.3	10.5
Nov. 1	Catch-up	6.1
Nov. 8	1.3, 7.1, 7.2	9.4, 9.5
Nov. 15	Review	—

## 7. GRADE

The course grade is distributed as follows:

Item	Intro Assignment	Homework	Quizzes/Final
Percentage	5%	39%	56%

The grade scale will be no stricter than

Letter	A	B	C	D	F
Cutoff	92%	82%	72%	57%	0%

with +’s and –’s to be used as needed for the final grade only. That is, getting at least 92% will guarantee an A, getting at least 82% will guarantee a B, getting at least 72% will guarantee a C, and getting at least 57% will guarantee a D.

7.1. **Intro Assignment.** This is a one-off assignment meant to introduce you to the technology we will be using in this class. The details for the assignment are on D2L.

7.2. **Homework.** Each lecture will have a homework set attached to it. These will also be done through WebAssign. The 3 homework assignments with the lowest score will be dropped. Assignments are graded question-by-question, so I recommend submitting each question as you complete it. Any remaining parts will receive 0 credit after the due date has passed. Each assignment will be due Tuesday of the week after it is assigned (you can see the due dates on assignments in WebAssign). Due dates on WebAssign will show in your local time zone.

I encourage you to work with each other on homework, though you should always attempt all problems on your own first, but all submissions must be your own work. Other students, TAs, tutors, or anyone else should never submit work for you. You should work all of your own problems. While the homework is done online, I highly recommend keeping a notebook of all of your homework so that you can refer back to it when studying and to help when you have questions as it allows us to see your thought process. I cannot stress enough keeping a written record of your homework, it will be an invaluable resource to you as you study!

7.3. **Quizzes.** There will be 4 quizzes throughout the quarter, each consisting of approximately 5-6 questions. Quizzes are worth a total of 56% of the final grade (14% each). For the most part, a quiz will focus on material since the previous quiz, but the problems will likely require skills obtained from material from prior quizzes. You are to work by yourself on quizzes as they are intended to serve as a reflection of your understanding of the course material. You should focus on showing all of your work and process when solving the problems on the quiz as it will be graded on content of the solutions, not on whether the final answer is correct or not. You may use a calculator as needed for quizzes, but no other resources should be used including, but not limited to: your book, notes, peers, homework, the internet. Quizzes will become available at midnight on the days in the table below and will remain available until 11:59pm on the date indicated in the table below. Once the quiz has been accessed, you will have 3 hours to complete and upload it to Gradescope.

Quiz Number	Date Available	Due Date
1	September 29th at 12:00am	October 1st at 11:59pm
2	October 13th at 12:00am	October 15th at 11:59pm
3	October 27th at 12:00am	October 29th at 11:59pm
4	November 10th at 12:00am	November 12th at 11:59pm

7.4. **Final Exam.** The final for the class will be an optional take home exam that will function similarly to the quizzes. It will effectively be a 5th quiz and if you choose to take the final exam, your score on the final will replace your lowest quiz score, provided that it is higher. Unlike the quizzes, the final will be approximately 8 questions and will be cumulative. The exam will become available at midnight the day of the scheduled final exam time and will remain available until 11:59pm on the day after the scheduled exam. Once the final has been accessed, you will have 5 hours to complete and upload it to Gradescope. See the chart below for the available time and due time for the final. The percentage score from your final exam will replace the lowest quiz score, provided it is higher.

Class Section	Final Exam Available	Final Exam Due
401	November 17th at 12:00am	November 18th at 11:59pm
403	November 22nd at 12:00am	November 23rd at 11:59pm
404	November 23rd at 12:00am	November 24th at 11:59pm

Please let me know ASAP if these dates conflict with any religious observations you may have, but otherwise no extensions/reschedulings will be given for quizzes or exams without extraordinary circumstances. Travel is NOT an extraordinary circumstance.

## 8. RESOURCES FOR SUCCESS

**8.1. Office Hours.** Please feel free to stop by my office hours any time you have questions, I'm here to help! If my scheduled hours do not work for you, we can try to arrange an alternative time to meet as well, just let me know!

**8.2. Math Tutoring.** Free math tutoring is available in the Math Tutoring Rooms in SAC 521 (LPC), in Lewis Center 1653 (Loop), and on Zoom. The tutoring lab opens every second week of classes and no appointment is necessary. The lab is available M-F and the schedule can be found on the doors of the tutor labs as well as at [go.depaul.edu/mathtutors](http://go.depaul.edu/mathtutors). A link to the tutoring schedule will also be posted on D2L.

**8.3. University Resources.** Your success is our number one priority at DePaul University. University resources to help you succeed include computer labs, free or discounted software, tutoring centers, health services, and services for designated groups, such as veterans and students with disabilities. Visit [go.depaul.edu/success](http://go.depaul.edu/success) to learn more.

**8.4. Your Peers!** Working together with your peers is the most valuable resource as a student. It really helps to bounce ideas off of each other while working on problems and your fellow students are often one of the best sources of support. I strongly encourage you to work together on homework and while studying!

## 9. DISABILITY

Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling you to access accommodations and support services to assist your success. There are two office locations:

- Loop Campus - Lewis Center 1420 - (312) 362-8002
- Lincoln Park Campus - Student Center 370 - (773) 325-1677
- Students can also email the office at [csd@depaul.edu](mailto:csd@depaul.edu)

Students who are registered with the Center for Students with Disabilities are also invited to contact me privately to discuss how I may assist in facilitating the accommodations you will use in this course. This is best done early in the term. Our conversation will remain confidential to the extent possible.

## 10. PREFERRED NAME AND GENDER PRONOUNS

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the quarter so that I may make appropriate changes to my records. Please also note that students may choose to identify within the University community with a preferred first name that differs from their legal name and may also update their gender. The preferred first name will appear in University related systems and documents except where the use of the legal name is necessitated or required by University business or legal need. For more information and instructions on how to do so, please see the Student Preferred Name and Gender Policy at [policies.depaul.edu](http://policies.depaul.edu).

## 11. RESPECT, INCLUSIVITY, DIVERSITY, AND EQUITY

In our classroom, diversity and individual differences are respected, appreciated, and recognized as a source of strength. Students in this class are encouraged and expected to speak up and participate during class meetings, and to carefully and respectfully listen to each other. So that everyone feels comfortable participating, every member of this class must show respect for every other member of this class.

Any attitude or belief that espouses the superiority of one group of people over another is not welcome in this classroom. Such beliefs are directly destructive to the sense of community that we strive to create, and will sabotage our ability to learn from each other (and thus sabotage the entire structure of the course).

## 12. CODE OF ACADEMIC INTEGRITY

DePaul University is a learning community that fosters the pursuit of knowledge and the transmission of ideas within a context that emphasizes a sense of responsibility for oneself, for others and for society at large. Violations of academic integrity, in any of their forms, are, therefore, detrimental to the values of DePaul, to the students' own development as responsible members of society, and to the pursuit of knowledge and the transmission of ideas. Violations include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution. Please refer to your Student Handbook or visit Academic Integrity at DePaul University (<http://academicintegrity.depaul.edu>) for further details.

## 13. WRITING CENTER

I strongly recommend you make use of the Writing Center throughout your time at DePaul. The Writing Center provides free peer writing tutoring for DePaul students, faculty, staff, and alumni. Writing Center tutors work with writers at all stages of the writing process, from invention to revision, and they are trained to identify recurring issues in your writing

as well as address any specific questions or areas that you want to talk about. Visit [www.depaul.edu/writing](http://www.depaul.edu/writing) for more information.

## 14. UNIVERSITY COUNSELING SERVICES

DePaul University Counseling Services (UCS) is committed to providing a range of culturally aware and sensitive clinical services to help currently enrolled DePaul students remove barriers to academic and personal success by addressing emotional, psychological, and interpersonal concerns through multiple treatment modalities. Services offered include: group counseling, individual counseling, couples counseling, crisis management, consultation, referrals, and telereach/outreach workshops. All services are currently being offered on a virtual, remote basis with no fees due to COVID-19. To connect with the counseling center, contact our main number at (773) 325-7779 during regular business hours (Monday-Friday, 9am-5pm) to schedule an initial consultation, which is typically scheduled within 1-2 business days of your call.

If you need more immediate assistance or are in acute distress, you can call the main number during regular business hours and ask to speak with a counselor. If you are experiencing a life-threatening emergency, call 911 or go to your nearest emergency room. The Counseling Services staff has extensive experience with providing support services to individuals of varying social identities and backgrounds. Further, our counselors know that commitment to diversity, inclusivity, and anti-racism is an ongoing and open-ended journey and, as such, our counselors frequently and regularly engage in self-reflection and training opportunities to increase cultural awareness and to challenge one's own privileges and biases.

## 15. LIFE HAPPENS!

The syllabus here lays out the policies for the course, but they are not intended to impede your educational opportunities in any way. Sometimes things beyond our control happen. If there is anything in here that causes you concern, please talk to me about it! My goal is for you to get the most possible out of this course, not to be rigid and uncaring.

The material here is tentative and subject to change pending our class needs. Students will be notified of any changes through D2L.