

Instructor: David Keating, dkeating@illinois.edu.

Section D13, D14, MWF 11:00-11:50am in 3101 Sidney Lu Mechanical Engineering Building
Section E13, E14, MWF 1:00-1:50pm in 4039 Campus Instructional Facility

Office hours: Tu 11:30-1:30 in 105 Oil Chem (508 S Sixth St) or by appointment.

Canvas page: We have a course Canvas page located here. All course information and announcements will be posted there.

Course description: Math 413 is an introduction to combinatorics with topics including permutations and combinations, generating functions, recurrence relations, inclusion and exclusion, and Polya's theory of counting. Same as CS 413. 3 undergraduate hours. 3 or 4 graduate hours. 4 hours of credit requires approval of the instructor and completion of additional work of substance. Prerequisite: MATH 314 or MATH 347 or equivalent experience.

Textbook: The main textbook for this course is *Introductory Combinatorics* by Brualdi, 5th edition. We will cover roughly chapters 1-8, 14 of the text.

Grades: Your final numerical grade will be computed as follows:

- Final exam: 30%
- 2 midterm exams: 25% each (50% total)
- Homework: 20%

When assigning final letter grades, I will only curve up. Thus a cumulative average of 90% guarantees at least an A-, an 80% guarantees at least a B-, and so on.

Exams: We will have two in-class midterms on October 8 and November 19 (both Wednesday). According to the university final exam schedule, our final exam will take place on

- 8:00-11:00am, Wednesday Dec. 17 for Sections D13, D14
- 7:00-10:00pm, Wednesday Dec. 17 for Sections E13, E14

The final exam will be cumulative; midterms will not be cumulative except to the extent that mathematics is inherently cumulative.

Homework: Homework will typically be assigned every week on Thursday and be due the following Thursday. Homework assignments will be posted to Canvas, and you will submit your completed homework on Canvas as a pdf. Your lowest two homework scores will be dropped. Late homework will not be accepted without a documented excuse.

You can submit your homework either as a PDF or as multiple pictures. To make the grader's job easier, I have a few formatting requests:

- If you are submitting pictures of your homework, please upload them in the correct order and orientation.
- If you do your homework on a tablet, please be sure to export it as a multi-page PDF, rather than a single long page (which is difficult for the grader to read).
- Regardless of the format, please indicate which problems appear on which pages of your submission. (You can mark a problem as appearing on multiple pages, or multiple problems as appearing on one page—so you don't need to think about this until you're submitting your work.)

Besides this, if you plan to continue in mathematics, it will very likely be to your advantage to become proficient in writing mathematics with \LaTeX (the typesetting software that I used to make this and other course documents).

Make-ups: If you need to miss an exam (with a valid, documented excuse), contact me **as soon as possible**—preferably well in advance of the exam in question. Most likely, I will address this by adjusting the weightings of your other exams, rather than giving a make-up.

Important Dates:

- September 8th: “10th day” add/drop deadline
- October 17th: Drop deadline
- November 22nd-30th: Thanksgiving break

Academic honesty: As always, you are expected to follow the UIUC student conduct code. You are encouraged to work on homework in groups; however, your final write-up must be your own. If you are unsure whether something is allowed, please ask.

Resources for students with disabilities: To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact me and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), or e-mail a message to disability@illinois.edu. A direct link to apply for services at DRES:

<https://www.disability.illinois.edu/applying-services>

Mental health: Significant stress, mood changes, excessive worry, substance/alcohol misuse or interferences in eating or sleep can have an impact on academic performance, social development, and emotional wellbeing. The University of Illinois offers a variety of confidential services including individual and group counseling, crisis intervention, psychiatric services, and specialized screenings which are covered through the Student Health Fee. If you or someone you know experiences any of the above mental health concerns, it is strongly encouraged to contact or visit any of the University's resources provided below. Getting help is a smart and courageous thing to do for yourself and for those who care about you.

- Counseling Center (217) 333-3704
- McKinley Health Center (217) 333-2700
- National Suicide Prevention Lifeline (800) 273-8255
- Rosecrance Crisis Line (217) 359-4141 (available 24/7, 365 days a year)

If you are in immediate danger, call 911.

Community of Care: As members of the Illinois community, we each have a responsibility to express care and concern for one another. If you come across a classmate whose behavior concerns you, whether in regards to their well-being or yours, we encourage you to refer this behavior to the Student Assistance Center (217-333-0050 or <https://odos.illinois.edu/community-of-care/referral/>). Based on your report, the staff in the Student Assistance Center reaches out to students to make sure they have the support they need to be healthy and safe.

Further, as a Community of Care, we want to support you in your overall wellness. We know that students sometimes face challenges that can impact academic performance (examples include mental health concerns, food insecurity, homelessness, personal emergencies). Should you find that you are managing such a challenge and that it is interfering with your coursework, you are encouraged to contact the Student Assistance Center (SAC) in the Office of the Dean of Students for support and referrals to campus and/or community resources.