



MATH 230 - Finite Mathematics with Applications

Credits: 3, Semester: Fall, Year: 2024

Meeting Days, Times, Location, and Room:
MWF 10:20 - 11:15 am in [Gore Hall Room 205](#)

In-person Student Hours:
MWF 9:10-10:10 am, Ewing Hall Room 524
Virtual Student Hours:
T 10-11 am (<https://udel.zoom.us/j/95525375053>)

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1. Instructor Contact Information

Instructor name: Kamal Joshi
Email address: saikamal@udel.edu
Office location: Ewing Hall 524

Email instructions: When emailing me about the course, please include your full name, the course number and section in the subject line. Also:

- Use your official UD email to contact me, not Canvas inbox. Emails sent from non-@udel.edu emails will most probably land in the spam folder and be never acknowledged by me.
- I recommend using a descriptive subject line, e.g. "Question on Assignment X", or "Request for office hours appointment on mm/dd".
- Allow 48 hours for a reply, excluding weekends and holidays.

2. Course Description

Course Catalog Description

[MATH230 - Finite Mathematics: UD course catalog description](#)

Canvas Course Site

[24S-MATH230-010](#)

Course Delivery

This course will be operated in an "in-person" model involving both on paper and online homework and quizzes/exams.

For the online component, you will complete the WebAssign homework and quizzes on canvas.

For the in-person component, you will meet with your instructor in a classroom setting thrice a week for 55 minutes and with your teaching assistant in a discussion room setting once a week for 55 minutes. The purpose of the in-person meetings is to give you an introduction to the various topics, do some hands-on problems, and provide you an opportunity to ask questions about the material, to work on exercises with classmates, and to participate in activities that will apply and reinforce the knowledge you learned.

To be successful in this format, it is important that you:

1. Preview the material before coming to the lecture class (and take notes for questions and doubts).
2. Ask questions through the various channels that you have available to you.
3. Complete the quizzes and homework (ideally without the use of online aides).
4. Come to the in-class meetings prepared to work and actively participate.

3. Learning Outcomes

This course is designed to give students a foundation in various topics of applied mathematics. You will have the opportunity to learn and explore the applications of plane coordinate geometry, linear equations, matrices, linear inequalities, set theory and probability theory. At the end of this course you will be able to

- Formulate and solve systems of equations using a variety of techniques, including matrix methods.
- Perform matrix operations - addition, subtraction, multiplication, inverse.
- Apply methods of linear programming to formulate and solve optimization problems.
- Understand basic concepts in set theory and combinatorics; and apply these concepts to practical problems.
- Model and solve problems using graphs, Venn diagrams, and trees, both quantitatively and qualitatively.
- Apply basic concepts of probability, including conditional probabilities, understand their relationship to independence, and apply these concepts to practical problems.

4. Learning Resources

Required Learning Materials

Textbook/Product Title: Finite Mathematics for the Managerial, Life, and Social Sciences: An Applied Approach

Author: Soo T. Tan

Edition: 12

ISBN: 9781337405782

Publisher: Cengage

- Visit startstrong.cengage.com for step-by-step registration instructions on how to access your Cengage* class materials.
- Cengage.com is the most affordable place to buy Cengage eTextbooks and online learning platforms. Ensure you are purchasing a certified version of your course materials. Learn more at cengagegroup.com/piracy.
- Need help? Chat with a support representative at support.cengage.com or visit techcheck.cengage.com to see if Cengage is experiencing technical difficulties.

**Beware of sites selling discounted codes; they are likely unauthorized sellers who have acquired access codes illegally and may pose a risk to your personal information.*

You may want to consider purchasing a Cengage Unlimited plan for this class, which provides access to all your Cengage materials for one price. Learn more by visiting cengage.com/unlimited.

WebAssign: The online system used for assigning and grading homework. WebAssign access will be given to you through the Cengage link on Canvas. Go to [How to register for WebAssign in Canvas](#) for instructions on how to register WebAssign in Canvas. **The cost of WebAssign will be charged to your**

university account after the add/drop deadline- Tuesday, September 10th. The e-book for this course is accessed via WebAssign.

IMPORTANT: If you have never used WebAssign at UD before, you will need to create a new user account. When registering for WebAssign, use your University of Delaware email address and full name. You will also need to provide your student ID number.

Optional Material

Print copy of *Finite Mathematics for the Managerial, Life, and Social Sciences* by Soo Tan © 2018 12th Edition. WebAssign gives you access to the e-books, but you may purchase a printed version if you prefer. Print copies are available for purchase at the Barnes and Noble UD Bookstore for an additional cost. See the bookstore website www.udbookstore.com for more details.

Technology

Canvas: In this class, Canvas, UD's online learning management system, will be used for all course activities and communication channels. All assignments will be posted through the Canvas course site unless otherwise directed. Information on how to use Canvas is available through the [Canvas Student Guide](#). Canvas can also be accessed via [MyUD](#).

Poll Everywhere: We will use this online polling platform to collect real-time responses from everyone attending class. Access to Poll Everywhere is possible by using any computer or mobile device with internet access. Poll Everywhere is a UD licensed tool and there is no cost to you to use this tool. To register and use the tool for this course, you will need my poll everywhere url: PollEv.com/kamaljoshi. Please read the [UD student guide](#) for a demonstration on how to log in and how to respond to polls. As a reminder, the [UD academic honesty policy](#) applies to the use of educational technology tools such as Poll Everywhere.

Zoom: For some student hours, zoom will be used for video conferencing. The link can be found on the left panel of the canvas course page under the section Zoom Meetings. Zoom is a web-based application that can be used from a computer, tablet, or phone. From a computer, click the class web link and be sure to install the small program that will download to your computer. You only need to install the program once. From a mobile device, download the free Zoom app and type in the class meeting ID number. A microphone and camera are recommended for online meetings. Information on how to test your computer's audio and video can be found on [Zoom's website](#). Learn more info about [Zoom at UD](#).

Student Hours

What are Student Hours?

Traditionally, professors schedule "office hours," or times when you can meet with them and/or their teaching assistants to discuss course material or other related interests. Professors usually communicate their office hours on the first day of class or in their course materials.

Where and When?

Please refer to the first page (below the course title) for information on days and timings of student hours for this course. I am also available by appointment if you have more urgent issues that cannot wait for the next regular student hour. **Simply send a one-line email to me:** saikamal@udel.edu

Simply Drop In

During the designated student hours, you can stop by my office or hop into the zoom meeting without an appointment.

Additional Learning Resources

- [MSLL Open Lab Hours](#)
- [Office of Academic Enrichment](#) (Drop-in tutoring for free and 1-on-1 tutors for hire)
- [UD Writing Center](#)
- If you need help with [research](#), [identifying primary sources](#), or [information literacy](#).

5. Learning Assessment

Grading Scale

Final grades will be assigned according to the following scale (the ranges are in percentage):

- A = 90-100
- B+ = 84-86.99
- C+ = 74-76.99
- D+ = 64-66.99
- F < 57
- Z = *Unofficial withdrawal. Applicable to students who never attended/participated or stopped attending/participating.*
- A- = 87-89.99
- B = 80-83.99
- C = 70-73.99
- D = 60-63.99
- B- = 77-79.99
- C- = 67-69.99
- D- = 57-59.99

Grades Breakdown

Course grades are based on the following weighted categories.

Component		Percentage
Discussion Class	Quizzes (every alternate week)	10%
	Attendance	2%
Lecture Class Attendance (based on poll everywhere participation)		3%
WebAssign Homework		15%
On Paper and Canvas Assignments		10%
Midterm Exam I		15%
Midterm Exam II		15%
Final Exam		30%
Total		100%

Exams

The midterms and final exam schedule for this semester is as follows:

	Date and Time	Location	Sections Covered*
Midterm Exam 1	Monday, Sep 30	In class	Sections 6.1-6.4, 7.1-7.3
Midterm Exam 2	Monday, Nov 4	In class	Sections 7.4-7.6, 2.1-2.6, 3.1-3.2
Final	¹ Friday, Dec 13 (11:30 AM - 1:30 PM)	Smith Hall Room 120	Cumulative - all topics covered Sections 6.1-6.4, 7.1-7.6 Sections 2.1-2.6, 3.1-3.4 Sections 8.1-2, 8.4, 9.1-9.4

*Changes to exam content may be made at the instructors' discretion. You will be notified of any changes well ahead of time.

Make-up Exams: Make-up exams are only offered to students who have a verified, approved, and documented university excuse.

Please do NOT make travel arrangements until you know when all your final exams are scheduled. Exam scheduling conflicts are not recognized as a legitimate excuse for missing an exam. As stated by the Faculty Senate, the policy of the University of Delaware is as follows:

"The Registrar's Office will ensure that there are no conflicts among the common examinations scheduled and will announce the dates and times of the common examinations in the Registration Booklet. In the few instances where it may be necessary for a student to schedule a course in conflict with a common examination, the instructor of the single-section course will treat the student's absence from class on that day as excused."

Discussion Quizzes and Attendance

Attending discussion classes is **mandatory**. Short **discussion quizzes (15 minutes)** will be conducted in every **alternate discussion class**. Please refer to your discussion TA's canvas course page for more details on the discussion classes, attendance policy, and quizzes.

On Paper Homework

There will be a **biweekly on paper homework** assignment throughout the semester. The homework will be **due on Mondays before class**. Your **lowest homework score will be dropped** for the final grade. This includes any 0 score resulting from missed homework.

Automatic Extensions: Throughout the semester, you will be allowed 1 late submission without penalty. The late submissions must be submitted in my office before the same week's Wednesday class. Late submissions in excess of 1 homework will receive a 25% penalty on the points earned in those homework. **DO NOT send emails requesting extensions on the homework deadline. Such emails will be ignored.**

¹ You can check the final exam schedules and locations for all your courses at [UD Final Exams \(udel.edu\)](https://udel.edu/UDFinalExams).

WebAssign Homework

MATH 230 utilizes WebAssign (<https://www.webassign.net>) to assign and deliver online homework. The site also gives you access to digital versions of the textbooks as well as other resources to help you review/practice.

Homework assignments to be completed through WebAssign will be **due at 11:59 pm** on the due date listed. Your **lowest homework score will be dropped** for the final grade. This includes any 0 score resulting from missed homework. For questions on webassign homework, you may use the “**Ask Your Teacher**” feature.

Early Submission Bonus and Automatic Extensions: You will get a **10% bonus** on webassign homework problems answered correctly **24 hrs before** the deadline. For each homework, you can request an **automatic extension of maximum 2 days (48 hrs) duration**. The window to complete an assignment with an extension request will **close 7 days after the due date**. That is, the **extension will be automatically granted** upon requesting it through Webassign and the new deadline will be **either 48 hours from the time of request or 7 days after the original due date whichever comes earlier**. No penalty is applied. **DO NOT send email requests for extending webassign homework deadlines. Such emails will be ignored.**

Avoiding WebAssign difficulties: Technical problems must be addressed by contacting WebAssign's technical support. Instructors cannot address these kinds of problems. However, several frustrating concerns can be avoided if you follow these guidelines:

1. Make sure your browser is supported. You can read about the system requirements on the student support page: <https://www.webassign.com/support/student-support>. Use the browser check tool to see if you need to update your browser or install missing plugins.
2. Web Assign responses are graded based on correct math syntax and notation. If you use a lower-case letter when an upper case is used in the statement of the problem, it will be marked wrong. If your parentheses are not placed correctly, it will be marked wrong. There is a Help option you might want to read PRIOR to working through an assignment.

Self-check Tests on Canvas

A 15 minute canvas quiz will be made available under the assignment group 'Self-check Tests' in alternate weeks. The quiz will be **due on the following Thursday**. Your **lowest quiz score will be dropped** for the final grade. Late submission of canvas quizzes will incur an **automatic deduction increasing at the rate of 5% per day after the due date**. **No manual extensions will be granted on the quiz deadlines.**

Class Participation

Class participation for the lecture classes will be tracked using the polleverywhere tool. 1, 2, or 3 poll everywhere questions will be posted during each lecture and you must be present in class in order to participate. The pollev participation percentage will be your grade for attendance which has a 3% weight in the overall grade. **Your participation and NOT the correctness** of your answers will be considered for the attendance grade. You can take 2 days of unexcused absences in the semester without affecting the participation score. In addition, the percentage of your correct answers in polleverywhere will be converted to a 2 percentage point scale and added to your final grade on canvas as extra credit.

Extra Credits

There will be some extra credit opportunities in this course. You can obtain extra credits by:

1. **Poll Everywhere:** While your participation in the polleverywhere quizzes in the lectures will determine your grade on attendance, the correctness of your answers will count towards extra credit. A total of 1.5% extra credit on your final grade can be earned by answering all pollev questions correctly.
2. **Webassign early submissions:** Earning 10% bonus points on webassign as explained under [Webassign Homework](#) can fetch you up to 1.5% extra credit on your final grade.
3. **Final Exam Extra Credit:** Complete the Course Evaluation at the end of the semester to **receive 1 point** directly to your final exam.

6. Course Calendar

Weekly Calendar

The content covered each week can be viewed in the [Modules](#) section in the canvas course page.

UD Academic Calendar

For your reference, here is the [official UD academic calendar](#).

Homework Sections and Due Dates

You can view the homework assignments schedule by accessing the webassign page via [Assignments](#).

7. Policies

Course-Specific Policies

Attendance

Students are required to attend each class on time and remain in the classroom for the entire lecture. Attendance will be taken during each class, often more than once, at the discretion of the instructor.

Absences on religious holidays listed in university calendars are recognized as an excused absence. Nevertheless, you are urged to remind me of your intention to be absent on a particular upcoming holiday. Absences on religious holidays not listed in university calendars, as well as absences due to athletic participation or other extracurricular activities in which you are an official representative of the university, shall be recognized as excused absences when you informs me in writing during the first two weeks of the semester of these planned absences for the semester.

Communication

Email: Please check your UDEL.EDU email regularly as class announcements will be sent via email directly through the UD Canvas portal. Students should check their UD email account at least twice a week to ensure they are aware of current course announcements.

Canvas: Please visit UD's Canvas portal to find all related course material such as announcements, the gradebook (all homework/quiz/exams), resources (answer keys, study material) and more. The Canvas portal can be accessed through <http://www.udel.edu/students/>.

Student Mental Health & Wellbeing

College students often experience things that may interfere with academic success such as academic stress, sleep problems, juggling responsibilities, life events, relationship concerns, or feelings of anxiety, hopelessness, or depression. If you are experiencing any of the above in a way that is negatively impacting your ability to participate fully in the learning activities for this class, I strongly encourage you to get in touch with me. Additionally, I have provided information from other campus-wide units below.

- Contact me
 - If you are struggling with this class, please check-in during student hours or contact me by email at saikamal@udel.edu
- Check-in with your academic advisor or the Assistant Dean for Student Services in your college.
 - If you are struggling in multiple classes, unsure whether you are making the most of your time at UD, or unsure what academic resources are available at UD.
- UD's Center for Counseling & Student Development (CCSD), TimelyCare, and UD Helpline
 - UD's Center for Counseling & Student Development (CCSD) provides cost-free and confidential mental health services promoting psychological wellbeing so that students can be more successful in their academic, personal, and career pursuits. CCSD provides in-person services including walk-in urgent visits, scheduled individual and group counseling, and consultation for students, parents, and faculty.
 - CCSD partners with [TimelyCare](#) to provide scheduled counseling and health coaching via telehealth.
 - For 24/7 mental health support, students have the option of calling the UD Helpline at 302-831-1001 or accessing TimelyCare's Talk Now service through the TimelyCare app or online. Visit [CCSD's website](#) for additional information and resources.
- UD's Crisis Text Line
 - Text "UDTEXT" (or "STEVE" for students desiring to connect with a professional who specializes in supporting students of color) to 741741 for confidential text message support.
- Division of Student Life
 - Explore the [Student Life's Wellbeing webpage](#) for a comprehensive listing of well-being resources, activities, and services available to all students.

UD Academic Policies

The Safety of Our Learning Environment

Student learning can only occur when students and their instructors feel safe, respected, and supported by each other. To ensure that our learning environment is as safe as possible, you are expected to abide by the most up-to-date [University of Delaware's COVID-19 Guidelines](#),

Academic Honesty

Please familiarize yourself with UD policies regarding academic dishonesty. The [Academic Honesty Policy](#) states: "Students must be honest and forthright in their academic studies. Students are expected to do their own work and must give proper credit for any work not their own. Students may neither give nor receive unauthorized assistance. Engaging in academic dishonesty, or allowing other students to do the same, corrupts the educational process and diminishes the quality of a University of Delaware degree." View the [university's procedures](#) for resolving academic dishonesty concerns. Contact Community Standards & Conflict Resolution at communitystandards@udel.edu or (302) 831-2117.

Harassment, Discrimination, and Sexual Misconduct

The University of Delaware works to promote an academic and work environment that is free from all forms of discrimination, including harassment and sexual misconduct. As a member of the community, your rights, resources and responsibilities are reflected in the Non-Discrimination, Sexual Misconduct, and Title IX policy. Please familiarize yourself with this policy at the [University's Office of Equity & Inclusion's website](#). You can report any concerns to the University's Office of Equity & Inclusion (302) 831-8063 or at titleixcoordinator@udel.edu. you can report anonymously through UD Police (302) 831-2222 or the [EthicsPoint Compliance Hotline](#).

- Read the [full policy](#)
- [File a report](#)

Faculty Statement on Disclosures of Instances of Sexual Misconduct

If, at any time during this course, I happen to be made aware that a student may have been the victim of sexual misconduct (including sexual harassment, sexual violence, domestic/dating violence, or stalking), I am a responsible employee, which means I am directed to report any incident of sexual harassment or misconduct to the University's Title IX Coordinator. The Title IX Coordinator will then meet with the student to discuss how the University will respond to the report and the student's rights and options, to offer resources, and to ensure that the student and the campus community are safe. If such a situation is disclosed to me in class, in a paper assignment, or in student hours, I promise to protect your privacy--I will not disclose the incident to anyone but the Title IX Coordinator in a confidential manner.

For more information on Sexual Misconduct policies, where to get help, and reporting information, please refer to www.udel.edu/sexualmisconduct. You can also send an email to the Title IX Coordinator at titleixcoordinator@udel.edu. At UD, we provide 24/7/365 crisis assistance and victim advocacy and counseling. Contact 302-831-1001 to get in touch with a sexual offense support advocate, as well as confidential and anonymous counseling services for other concerns.

Accommodations for Students with Disabilities

Any student who may need disability-related accommodations should contact the Office of Disability Support Services (DSS) office as soon as possible. For more information, please visit [Getting Registered at DSS](#). Contact DSS by phone: 302-831-4643; fax: 302-831-3261; website: www.udel.edu/dss; email: dssoffice@udel.edu; or visit 240 Academy Street, Alison Hall Suite 130 during business hours (8-5 M-F).

Non-Discrimination

The University of Delaware does not discriminate against any person on the basis of race, color, national origin, sex, gender identity or expression, sexual orientation, genetic information, marital status, disability, religion, age, veteran status or any other characteristic protected by applicable law in its employment, educational programs and activities, admissions policies, and scholarship and loan programs as required by Title IX of the Educational Amendments of 1972, the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964, and other applicable statutes and University policies. The University of Delaware also prohibits unlawful harassment including sexual harassment and sexual violence.

For inquiries or complaints related to non-discrimination policies, please contact: Office of Equity & Inclusion- oei@udel.edu, (302) 831-8063

For complaints related to Section 504 of the Rehabilitation Act of 1973 and/or the Americans with Disabilities Act, please contact: Office of Disability Support Services, dssoffice@udel.edu, Alison Hall, Suite 130, Newark, DE 19716 (302) 831-4643 OR contact the [U.S. Department of Education - Office for Civil Rights](#)

MATH230 S24 Schedule (tentative)

*WA = WebAssign, WST = Weekly Self-check Test (canvas), DQ = Discussion Quiz

Week	Topics	Sec	HW / Tests / Exams
Week 1	Sets and Set Operations	6.1	<ul style="list-style-type: none">• WebAssign Sample HW• WebAssign HW 1
Week 2	Counting and Sets + Exercise Problems (6.1-6.2) + Multiplication Principle	6.2 6.3	<ul style="list-style-type: none">• Written HW 1
Week 3	Permutations and Combinations + Exercise Problems (6.3-6.4), Circular Permutations + Intro to Probability, Rules of Probability	6.4 7.1	<ul style="list-style-type: none">• Discussion Quiz 1
Week 4	Exercise Problems (Ex 7.1-3) + Use of Counting Techniques in Prob. + Exercise Problems (Ex 7.4)	7.2-3 7.4	<ul style="list-style-type: none">•
	Conditional Prob., Exercise Problems (Ex	7.5	<ul style="list-style-type: none">•

Week 5	7.5) + Bayes' Theorem + Exercise Problems (Ex 7.6)	7.6	
Week 6	Exam Review + Systems of Linear Equations + Exercise Problems (Ex 2.1), Unique, Under- and Over-determined Solutions	2.1-3	•
Week 7	Exercise Problems (Ex 2.2-3) + Intro to Matrices, Matrix Multiplication + Exercise Problems (Ex 2.4-5)	2.4-5	•
Week 8	Inverse of a Square Matrix, Exercise Problems (Ex 2.6) + Graphing Systems of Linear Equations in Two Variables + Exercise Problems (Ex 3.1)	2.6 3.1	•
Week 9	Linear Programming Problems + Exercise Problems (Ex 3.2-3)	3.2-3	•
Week 10	Sensitivity Analysis + Exercise Problems (Ex 3.4) + Distributions of Random Variables	3.4 8.1	•
Week 11	Expected Value, Exercise Problems (Ex 8.1-2) + The Binomial Distribution, Exercise Problems (Ex 8.4) + Additional Practice	8.2 8.4	•
Week 12	Markov Chains, Regular MC + Exercise Problems (Ex 9.1-2)	9.1-2	•
Week 13	Absorbing Markov Chains + Game Theory + Exercise Problems (Ex 9.3-4)	9.3 9.4	•
Rest of the days	Review		