Math 1553: Introduction to Linear Algebra
Syllabus
Georgia Tech, Fall 2020

Note: the syllabus and course schedule are subject to change. Any changes to the syllabus and/or course schedule after the semester begins will be relayed to the students in class and through e-mail.

Textbook

The primary textbook for this course is *Interactive Linear Algebra* by Dan Margalit and Joseph Rabinoff.

There is also an optional reference textbook: *Linear Algebra and its Applications*, 5th edition, by Lay–Lay–McDonald, which you can view online if you purchase access to MyMathLab. See the final page of the syllabus, the School of Math page for more details.

Course-level learning goals

By the end of this course, it is expected that students will be able to do the following.

A) Solve systems of linear questions.

B) Solve eigenvalue problems.

C) Analyze mathematical statements and expressions (for example, to assess whether a particular statement is accurate, or to describe solutions of systems in terms of existence and uniqueness).

D) Write logical progressions of precise mathematical statements to justify and communicate your reasoning.

E) Apply linear algebra concepts to model, solve, and analyze real-world situations.

Students are expected, at a minimum, to be able to do all problems from lecture and homework (and similar problems) on quizzes and exams.

Course information posted online

Your instructor will update their class web page with class information and materials (including, for instance, section-specific studio and office hour times). You are responsible for obtaining any announcements or materials placed on your instructor's webpage and Canvas. We also have a Piazza/Teams forum for each class, to facilitate discussion.

Homework

Homework will be done online through WeBWorK, accessed through Canvas. Homework will be due weekly. Often, more than one assignment will be due in a given week. The warmup assignment for the first week of class on WeBWork is just for practice and will not be graded.

Homework will generally be due at **11:59 pm on Thursdays**.

Your two lowest homework scores will be dropped. Each assignment counts the same amount toward your grade.

To access WeBWorK, click on Assignments in Canvas, then WeBWorK. Most of the time, you will need to do two login attempts in order to get this to work.

Once WeBWorK tell you that you have correctly solved a problem, your score is recorded forever (no need to save). Also note that a handful of problems have a limited number of attempts.

You are encouraged to work in groups on the homework.

Times

All times in this syllabus are local to Georgia Tech's main campus in Atlanta, which this semester is on Eastern Daylight Time (EDT) in August, September, and October, and on Eastern Standard Time (EST) in November and December.

Quizzes, Exams, and regrades

Starting the week of August 24, there will be quizzes on most Fridays. Your lowest quiz grade will be dropped. The quizzes are open book and open notes. No other resources, such as internet searches, Chegg.com, calculators, cell phones, calculators, or other electronic devices are allowed during quizzes and exams.

We will have three midterm exams, which will take place on the following dates:

1. Friday, September 18
2. Friday, October 16
3. Friday, November 20

Both quizzes and exams will be administered in Canvas. To access any of these, click on Quizzes. The quizzes and exams will be available on the specified days from 8 am to 8 pm. For each quiz you will have 25 minutes to work, and for each midterm you will have 50 minutes to work. Therefore, for quizzes you will need to start by 7:35 pm if you want the full amount of time and for midterms you will need to start by 7:10 pm if you want the full time.

Cumulative Final exam: Friday, December 4, from 9:00 am - 9:00 pm.
For the full final exam schedule, see the registrar's schedule.

Only under extreme extenuating circumstances will you be able to take the final exam at a different time or date. Early travel plans (including already-purchased tickets) are **not** an acceptable reason for this.

Again, these exams will be administered through Canvas Quizzes. You will have 3 hours to take the exam. So start by 6 pm if you want the full time. The same rules about outside resources that apply to quizzes and midterms apply here.

Statement of Inclusivity

We are not all coming to this class with the same privileges, resources, time, and knowledge. It is important to keep this in mind when working with each other on homework assignments and during lecture. It is our strong belief that as a community, mathematicians and scientists must do a better job of making our disciplines more accessible to people of all races, genders (including gender non-conforming individuals), sexual identities, and class backgrounds. While this is a priority for us in the classroom, we do not claim to know how to best honor this commitment, and so we are open to feedback from students when it comes to making the course more accessible and inclusive to all identities.

The Honor Code and Academic Dishonesty

Abide by the honor code at all times. See http://honor.gatech.edu and here.

Any evidence of cheating or other violations of the Georgia Tech Honor Code will be submitted directly to the Office of Student Integrity. Cheating includes, but is not limited to:
1. Using a calculator on quizzes or tests.
2. Copying directly from any source, including friends, classmates, tutors, internet sources (including Wolfram Alpha and Chegg.com), or a solutions manual.
3. Allowing another person to copy your work.
4. Taking a test or quiz in someone else's name, or having someone else take a test or quiz in your name.
5. Asking for a regrade of a paper that has been altered from its original form.

We catch many cheaters every year. Don't do it!

Students with Disabilities and/or in need of Special Accommodations

Georgia Tech complies with the regulations of the Americans with Disabilities Act of 1990 and offers accommodations to students with disabilities. If you are in need of classroom or testing accommodations, please make an appointment with the Office of Disability Services to discuss the appropriate procedures. More information is available on their website. Please also make an appointment with your instructor to discuss your accommodation, if necessary.

Missed and late work policy

You may only receive extensions/excuses for homework, quizzes, and exams in the following circumstances.

- University-approved absence: Please give your instructor notice by August 24, or as soon as possible once your absence has been approved.
- Religious holiday: By the end of class on Wednesday, August 26, you must notify your instructor and your TA of any conflicts between your course work and religious holidays.
- Illness: Except under extenuating circumstances, you must notify your TA *in advance* and notify the Office of the Dean of Students if you will miss a quiz, so that they can confirm it with your instructor.
- In case of a family or personal emergency, please have your academic advisor or the Dean's office contact your instructor. Contact your instructor yourself if needed.

Otherwise, missed quizzes, missed homeworks, and missed exams result in a 0.

If you will miss an **exam**, then you must notify **your instructor** *in advance* (rather than your TA) and provide any necessary documentation to the Dean's office so that they may contact your instructor with verification.

If you are not able to take a quiz or midterm exam at the appointed time, and you have an official excuse, you will be excused from the assessment in the sense that it will not count towards your grade (and other quizzes/exams will count more).

Grade breakdown

The components of the class are weighted as follows:

- 20% Homework (two lowest scores dropped)
- 30% Quizzes (lowest score dropped)
- 10% Midterm 1
- 10% Midterm 2
- 10% Midterm 3
- 20% Final exam

If 85% of the students in a given section (for example, Section M) complete the CIOS course evaluations, then an additional quiz will be dropped for that section.

Grade assignments

After *all* grades are in and all overall percentage scores for students have been computed using the weights described above, grades are assigned. The standard cutoffs are as follows.

A: [90%, 100%] B: [80%, 90%) C: [70%, 80%) D: [60%, 70%) F: [0%, 60%)

So, to guarantee an A, get 90% or better overall. (90 means 90, not 89.9)
To guarantee at least a B grade, get 80% or better overall, etc.

These cutoffs *might* be adjusted, but only in the downward direction (to make letter grades higher). In the event of a curve, only your final overall percentage grade for the course will be curved. Individual quizzes and exams will not be curved as we go along.

Writing assignment

There is an optional writing assignment. The assignment is to find an application of linear algebra to some field of study outside of mathematics, and write a one page summary of the application, **in your own words**. This assignment can be completed any time during the semester after the corresponding linear algebra material has been discussed in class. You can choose do the assignment before we cover the corresponding material in class, but then you will be expected to explain the new material. Completed assignments should be posted on Piazza/Teams, with the tag "writing assignment." You will be able to replace one quiz grade with the writing assignment grade (in other words, you can replace one less-than-perfect quiz score with a perfect score).

Email and Chat recommendations

Your instructor has a very busy schedule and many emails to respond to. While they will be happy to help when they can, it is not always possible for them to respond to emails quickly. If you have a question that concerns the whole class, or that can possibly be answered by another student or TA, then post your question to Piazza/Teams. You can always check the course Canvas site or the syllabus; many basic questions are answered that way.

Also, please be polite in your emails and posts. For example "When is the test?" is less polite than: "Dear Professor, I know you mentioned in class that there was a midterm coming up, but I can't seem to find the date on my notes, in the syllabus, or in the recording from class. Also, no one responded to my post about this. Would you mind telling me the date? Thanks very much. Sincerely, Student.

When asking a mathematical question in a post, please post a screenshot of your work and/or a detailed description of what you tried. It is not generally not advisable to ask "How do you do #8?" Nor is it advisable to answer questions on Piazza/Teams by giving the answer. Rather, it is preferable to give hints and suggestions, or to point out where somebody went wrong.

Additional resources and tutoring

The Math Lab offers tutoring in Clough Commons 280, and there is also free **1-to-1 tutoring**. If appointments are full when you are available, you may request additional tutoring. There is additional drop-in tutoring on the 2nd floor of the Clough Commons, as well as PLUS sessions. A comprehensive list of tutoring resources is available at http://www.success.gatech.edu/tutoring-0.

Remote lectures and hybrid studio

Lectures for this class will be delivered synchronously online. Studio will be delivered in hybrid format. For Studio, most of the sessions will be conducted synchronously online, with one optional in-person discussion scheduled for November 13 (details forthcoming). Attendance will not be taken in Lecture or Studio. All assessments (homework/quizzes/exams) will be delivered asynchronously online. Therefore, it is possible to take this course completely remotely.

Attendance

Attendance at synchronous lectures and studios is highly encouraged, but not required. Failure to attend will not affect your grade directly.

When you do attend, we also strongly encourage you to show courtesy to your fellow classmates and instructor by adhering to the following class rules: unless otherwise directed, turning off all apps except the meeting application, a note taking application, and any other application you are using for course work. It is also polite and helpful to come to class on time, stay for the entire period, and stay actively involved by paying attention and asking questions when you have them. Your grade will benefit!

Waitlists, Registration, Permits, etc.

Instructors are forbidden from doing anything regarding class registration. They cannot issue permits, remove students from waitlists, etc. For guidelines on such matters, please consult https://math.gatech.edu/permits-and-waitlists.

Georgia Tech Resources for Personal Support

The Office of the Dean of Students: 404-894-6367; Smithgall Student Services Building 2nd floor. You also may request assistance here.

Counseling Center: 404-894-2575; Smithgall Student Services Building 2nd floor
Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources. Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2204.

Students' Temporary Assistance and Resources (STAR) Can assist with interview clothing, food, and housing needs.

Stamps Health Services: 404-894-1420; Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition

OMED: Educational Services

Women's Resource Center: 404-385-0230

LGBTQIA Resource Center: 404-385-2679

Veteran's Resource Center: 404-385-2067

Georgia Tech Police: 404-894-2500

Growth, Not ability

There is a very prevalent belief that you are either "good" or "bad" at math, and if you are "bad" at it, then you will always be bad at it no matter how hard you try. This is false, and the mathematics community bears a lot of responsibility for perpetuating this myth. In reality, mathematics is just like any other discipline or skill: you can improve more and more with practice (think of any hobby you got better at over time).

We are all capable of growth in mathematics. You should measure your success in this class by how much your understanding of the concepts has improved over the course of the semester. Also, math is very hard, so you should expect to struggle with the material! When you struggle, you are learning and growing. If you find that you are not struggling at all, this might not be the right course for you and you should consider a more advanced course.

Respecting each other

It is important to think about how to respect one another when working together in study group and on homework assignments. It is not equally easy for all of us to speak up in a large group, and the voices of historically underrepresented/marginalized students are most easily drowned out in group work. So please keep this in mind when working together. Here are some concrete examples of positive collaborative behavior:

1. Making sure everyone who wants it has the opportunity to speak frequently. This can mean checking in with each other to make sure everyone is following along and contributing when they have an idea.
2. Respecting people's pronouns and other aspects of their identity.
3. Making sure that everyone's ideas are acknowledged when writing up the final solution to a problem. When working in groups, solutions often evolve organically; an idea might pop into your head and you may think it's yours and yours alone, but perhaps you only arrived there because of something else that someone already said. Pay attention to what people are saying and try to learn from one another.

We will do our best to check in with you periodically during the semester. If at any time in the semester you want to be working in a group but do not have a group of students to work with, please let us know and we will help you find a working group. If at any time in the semester, you find yourself in a group of students for which the above behaviors aren't being practiced and people aren't feeling respected, please let us know as well.

MyMathLab Course Information

Georgia Tech currently utilizes MyMathLab (MML) to give students joint electronic access to the Thomas *Calculus* text and the Lay *Linear Algebra* text.

If you are going to take Math 1551, Math 1552, Math 1554, or Math 2551, then probably you will end up buying the Pearson bundle for that class. If that is the case, you may want to purchase the bundle now so that you can use Lay's book as an extra resource and MyMathLab for extra practice.

MyMathLab Course ID: margalit63498

Important notes on MML:

- If you already have an account on MyMathLab at Georgia Tech using this combined textbook within the past 18 months, then you do not need to purchase a new code. Login to your account on MyMathLab and follow these instructions.
- If you already have a MyMathLab account that used either the Thomas or the Lay texbook in the past 18 months, but you were unable to add our course using the previous step, please send an email to Lyndsee.Hewston@Pearson.com and include the following information:
  1. Your First and Last Name
  2. The email address used to register for MML
  3. Your Login ID for MML
  4. Our course ID (listed above)

You should receive a reply within 36 business hours from the Pearson support team regarding your account status. In the meantime, you can access our course using the "temporary access" option when registering. Please do not pay for a new code until you receive a reply from Pearson.

- If you do not have a MyMathLab account using the Thomas or Lay textbooks at Georgia Tech, or if your account is over 18 months old, you will need to purchase a new code for our course.
- When signing up for MyMathLab, it will be immensely helpful if you will set your STUDENT ID to your USERID for the GT system (i.e., your Georgia Tech USERID, as in "cjankowski3" etc).

MyMathLab comes with an entire electronic version of the textbook; it is your choice if you would also like to own the textbook in print. You may purchase a MyMathLab code either from the bookstore or online while registering at http://www.mymathlab.com. PLEASE NOTE: GEORGIA TECH HAS A SPECIAL CODE PACKAGE THAT INCLUDES BOTH TEXTBOOKS. THIS CODE CAN ONLY BE PURCHASED THROUGH THE CAMPUS BOOKSTORES OR DIRECTLY FROM PEARSON. CODES PURCHASED BY OTHER VENDORS WILL NOT WORK!

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