# MATH 1553 Syllabus

Introduction to Linear Algebra, Common Syllabus, 2 credit hours

Spring 2027

**Note: everything on this syllabus is subject to change without notice through Monday, January 11. Any changes made after that date will be communicated through a Canvas announcement.**

## Instructor Information

Instructor:

- Lectures A and HP: Prof. Chris Jankowski
- Lectures C and E: Prof. Zong Shang
- Lecture F: Prof. Shunyu Wan
- Lectures L and M: Prof. Haoming Ning
- Lecture S: Prof. Dun Tang

Office Hours: To be determined, and will vary by instructor.

## General Course Information

### Description

The essential topics of the course are vectors in three dimensions, curves and surfaces in space, functions of several variables, partial derivatives, optimization, and integration of functions of several variables.

### Course Learning Outcomes

Linear Algebra is very conceptual compared to most courses that students have previously taken. 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.

### Prerequisites

The prerequisite courses are listed on the School of Math website.

### Required Course Materials

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

There is also an optional reference textbook (we do not use it at all anymore in 1553): *Linear Algebra and its Applications*, 6th edition, by Lay-Lay-McDonald, which you can view online if you purchase access to MyMathLab at a link that will be available by the beginning of the semester. To be clear, very few students purchase it, and we have not used it in many years.

**Grading Policy**

The components of the class are weighted as follows:

- 5% Studio participation (three lowest scores dropped)
- 10% Homework (70% cap for full credit)
- 15% Quizzes (70% cap for full credit)
- 15% Midterm 1
- 15% Midterm 2
- 15% Midterm 3
- 25% Final exam

If you score higher on your final exam than on one of the midterms, then your final exam will count for 32.5% of your grade and your lowest midterm will count for 7.5% of your grade. However, any student found guilty of academic dishonesty of any kind in Math 1553 is ineligible for this policy.

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 89.99)

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 assessments will not be curved as we go along.

**Description of Graded Components**

Studio Participation. Starting the week of January 18, we will take a grade for in-person participation in each studio. Each grade will be 0/1 or 1/1. Any student who arrives more than five minutes late for studio or leaves before the TA ends studio may be given a 0. The studio participation grade operates under an extremely generous bucket points system, where we drop up to 3 grades of 0/1 in studio participation. There are no makeups for missed studios. However, the policy of 3 drops for just 10 graded studios means that a student will receive a perfect score in studio participation unless they get a zero on more than 30% of our studios. With this in mind, a student should easily get a perfect score in this category even if they must occasionally miss a studio due to any reason. For example, if a student misses one studio due to a religious holiday and misses another studio due to an Institute-approved absence, they would still need to miss 2 additional studios in order to get less than 100% in their studio participation grade.

If you have extraordinary circumstances that will lead you to miss more than 3 studios (for example, if you will have many absences due to Institute-mandated travel due for athletics, or ODS accommodations for absences), please schedule an appointment with Prof. Jankowski to discuss these during the first two weeks of the semester.

Homework. Our homework is through Webwork, which is accessible in Canvas in the Assignments tab. 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 Wednesdays**, but may occasionally be due on another day of the week in exceptional cases such as exam weeks. By the beginning of the semester, we will post a course calendar with details.

Homework operates on a bucket points system designed for very generous flexibility. To receive full credit in the homework category of the course grade **you must reach 70% of the total** among all the homework points that are available in WeBWorK. *No late homework will be accepted.*

Below, we will describe quizzes and exams. All quizzes and exams must be taken in person, and there is no

option for online proctoring. Quizzes can never be taken early, for any reason.

Quizzes. Quizzes will be administered in-person during studio on many Fridays. The course calendar will have the dates. Students with extended time accommodations for quizzes can either arrange with their TA to begin the quiz early, or they may take the quiz at the Testing Center at any time on the quiz date that fits their schedule.

Like our studio participation and homework grades, our quiz grades operate under a very generous bucket points system. To receive full credit in the quiz category of the course grade **you must reach 70% of the total** among all the quiz points that are available during the semester. No books, notes, calculators, cell phones, or other electronic devices are allowed during quizzes and exams. *There are no makeup quizzes* under any circumstances, so if you miss a quiz for any reason you will need to take a different quiz to reach the 70% cap for the semester in order to get full credit in the quiz category of the final course grade. As with studio participation, the only exceptions for this are for students with extraordinary circumstances such as missing many studios due to Institute-mandated travel, and they should arrange a meeting with Prof. Jankowski within the first two weeks of the semester.

Midterm Exams. We will have three midterm exams, given in person from 6:30-7:45 PM on the following dates:

1. Wednesday, February 10.
2. Wednesday, March 17.
3. Wednesday, April 14.

We will announce the exam rooms once they are available, but they are typically different than our usual classrooms. See the course calendar for a tentative list of topics covered on each quiz and exam. If a change in schedule pace requires the topics list to change, then this will be updated on the course calendar and the students will be notified through a Canvas announcement.

Final Exam. Our final exam is cumulative and will be held on Tuesday, May 4, from 6:00-8:50 PM.

# Course Policies

## Attendance and Participation

Students are expected to come to class and engage with the material. Class disruption will not be tolerated.

## Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on any assessment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Any evidence of violations of the Georgia Tech Honor Code will be submitted directly to the Office of Student Integrity, including but not limited to:

1. Using a calculator, books, or any form of notes on quizzes and tests. Use of cell phones is not allowed on any assessments. Putting a cell phone on your desk, or on your lap, or in sight at all, will result in a zero on the quiz or exam. Smart watches, smart glasses, ear buds, and headphones are also not allowed and will result in a zero.
2. Using Chat GPT (or any AI / LLM) on any assessment or copying directly from any source, including friends, classmates, tutors, internet sources (including Wolfram Alpha), or a solutions manual.
3. Allowing another person to copy your work.
4. Taking a test in someone else's name, or having someone else take a test in your name.
5. Asking for a regrade of a paper that has been altered from its original form.

6. Communicating with another student in any manner regarding an exam during the time period when the assessment is available.

## Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs. Below, we will put important notes regarding all midterms and the final exam for students with accommodations.

1. For our midterm exams, the Testing Center does not stay open past 5 PM, so **it will not accommodate us**. Students with 1.5x extended time accommodations may take the exam in person starting at 6:07 PM and ending at 8:00 PM in a room to be determined. Students with 2x extended time accommodations may take the exam in person starting at 5:30 PM and ending at 8:00 PM in that same room. If this option is not possible for you and you have testing accommodations that specify permission to take assessments at the Testing Center, please contact Prof. Jankowski at least two weeks before our first midterm exam to discuss this.
2. For the final exam, the Testing Center **does** accommodate Math 1553 students, and students with extended time **must** register for the latest time slot offered by the Testing Center **on the final exam date**. Any student who does not register appropriately for the final exam at the Testing Center by the deadline must take the exam at the Testing Center during the final Conflict Period date at 11:20 AM, and they may face a significant penalty on the final exam (failing to register on time is not a legitimate reason for taking the exam at a later date).

## Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

## Core IMPACTS

This is a Core IMPACTS course that is part of the *STEM* area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals.

This course should direct students toward a broad *Orienting Question*:

- How do I ask scientific questions or use data, mathematics or technology to understand the universe?

Completion of this course should enable students to meet the following *Learning Outcome*:

- Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems and explain natural phenomena.

Course content, activities and exercises in this course should help students develop the following *Career-Ready Competencies*:

- Inquiry and Analysis
- Problem-Solving
- Teamwork

## Additional Course Policies

### Missed Work Policy

Homework and studio participation operate on a bucket-points system designed for enormous flexibility, where students can get a perfect score while completing only roughly 70% of the total work. With that in mind, it does not make sense to give makeups for those categories except for extreme situations such as long-term hospitalization. In such extreme circumstances, please reach out to Prof. Jankowski and arrange for the Office of the Dean of Students to send him a letter of confirmation.

Excused absences for exams require **advance notice** and also require **documentation** provided through the Office of the Dean of Students once it is available. Excused absences for exams are only possible under the following circumstances.

- Institute-approved absence: Please give Prof. Jankowski notice by Wednesday, January 20, or as soon as possible once your absence has been approved.
- Accommodations: Students with accommodations for flexibility with attendance, extended deadlines, or a similar accommodation, must discuss these with Prof. Jankowski during the first two weeks of the semester.
- Religious holiday: By the end of class on Wednesday, January 20, you must notify Prof. Jankowski of all classes and studios that you will miss due to religious holidays.
- Illness, medical appointment, etc.: You must notify Prof. Jankowski in advance and be prepared to provide official documentation to the Dean's office or to some other appropriate Georgia Tech contact that will stay in accordance with privacy laws.
- In case of an emergency leading to an extended absence, please have your academic advisor or the Dean's office contact Prof. Jankowski.

Please keep in mind that students are generally only permitted to take one makeup exam. In the event that a student requests more than one makeup exam, they will need to with Prof. Jankowski to discuss next steps.

Math 1553 is one of the largest on-campus courses (if not the largest) at Georgia Tech, so it is important for us to have clear policies and communication. Just to give an idea of the scale: spending 10 minutes on email with each student in the course would amount to over 350 hours of email for the course coordinator each year.

In order to request a makeup midterm exam students must send a request to Prof. Jankowski through email using the template below. Incomplete or late requests will be rejected. Even if the student has an Institute-approved absence, it is still the student's responsibility to send this email in order to confirm the details of the makeup.

### Makeup exam request template

1. Date of the absence. Advance notice is required, so the date and time cannot be in the past unless the circumstances were extraordinary. In that case, an explanation is required.
2. Reason for absence, and a description. The reason must be one of the following.
   - Illness
   - Religious observation
   - Institute-approved travel
   - Other type of Institute-approved absence, with details provided

   We receive many excused absence requests from students who wish to take an exam early so that they can take a long weekend due to family plans, holiday plans, or similar scenarios. We cannot excuse these absences or make these accommodations.
3. Documentation for the absence. This is a required component. You may either:
   - Provide documentation directly, with any confidential info redacted as necessary so that we do not violate any laws or GT policies.

- Describe what documentation you will provide and how you will provide it. (upcoming email, Dean of Students, etc.).

**Makeup exams logistics**

Please note that there are no early makeups for any exams for any reason, including already-purchased plane tickets.

If a student has an excused absence for an exam, the student may take the makeup exam either from 5:00-5:50 PM or 6:00-6:50 PM the following Monday in Skiles 261 (or an alternate announced location if necessary). In the event that the student cannot take the makeup exam due to an excused absence, the score for that exam will be computed by taking the average percentage scores for that student on the remaining midterms and the final exam. As an example: if a student has an excused absence for midterm 2 and its makeup, then the student's score for midterm 2 will be computed by taking the average of the student's percentage scores on midterm 3 and the final exam.

## Campus Resources for Students

**Undergraduate Student Academic Success Resources**

A list of resources for undergraduate students' academic success and information about advising can be found at Success at Tech.

The Math Lab offers tutoring, and there is also **1-to-1 tutoring**. If appointments are full when you are available, you may request additional tutoring. We also have PLUS sessions in Math 1553, with a schedule that will be announced during the semester. A comprehensive list of tutoring resources is available at https://tutoring.gatech.edu.

**Student Well-Being:**

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being.

**Statement for Belonging**

As members of the Georgia Tech community, we are committed to creating a learning environment in which all of our students feel safe and included. Because we are individuals with varying needs, we are reliant on your feedback to achieve this goal. To that end, we invite you to enter into dialogue with us about the things we can stop, start, and continue doing to make the classroom an environment in which every student feels valued and can engage actively in our learning community.

**Extra credit, Canvas grades, reminder on electronic devices**

1. There is **no extra credit**, and there are no quiz re-takes or exam re-takes.
2. You can use calculators to check your computations when doing homework. You are **not** allowed to use any electronic devices on quizzes or exams.
3. Once a quiz or exam has been graded (or studio participation has been recorded), the grades will be entered on Canvas. Please check that the grade on your assessment is not blank and that it matches the grade recorded on Canvas. If it does not, please contact your instructor within two weeks of the assessment to correct the error. With this in mind, if you participated in a studio but have a blank score listed more than a week later, you need to contact your TA to resolve the issue or this blank will become a 0.

**Email policy**

Please read the syllabus first. Before sending an email, please check the syllabus closely! Homework due dates, quiz dates, exam dates, policies, etc. are available on the syllabus or course calendar.

Let's not discuss grades by email. Any questions about letter grades (including "the curve") should be asked during office hours or in an appointment outside of office hours, but never by email. We must deny all requests that ask for a special grading arrangement of any kind. The only reason for sending a grade-related email is an incorrect score in Canvas. In that case, please email Prof. Jankowski detailed computations for what you believe is your correct score.

Let's not discuss math by email. Let's use Piazza instead! This will open the question to the entire class, including all TAs, instructors, and other students who may be able to provide insight. We can also discuss questions during office hours, or at a scheduled appointment outside of office hours.

**Lecture and Studio**

Students are expected to come to lecture. In the event of an absence, students are responsible for all missed materials, assignments, and any additional announcements or schedule changes given in class. Class disruptions of any kind will not be tolerated. Please show courtesy to your fellow classmates and instructor.

**Inclement Weather and Digital Learning Days**

If Georgia Tech closes campus or decides to cancel in-person classes for a day due to weather or analogous circumstances, or if there is a personal emergency for the professor, we may hold lecture remotely on that date through MS Teams or Zoom.

**Missing Grades and Hard Copies of Exams**

On Canvas, if your grade is not reported, that means we do not have a submission from you for that assignment. It is every student's obligation to check Canvas regularly and report grading errors promptly to their instructor.

This is especially important with regard to our midterm exams. Once the regrade request period for a midterm exam has passed, we may discard the physical copies of the midterms, so all that will remain is the digital copy on Gradescope. With this in mind, it is the student's responsibility to take a close look before the regrade request deadline to ensure that their exam is present in Gradescope and to check that there was not a scanning issue that affected how a problem was graded.

**Regrade requests**

The grading of quizzes and exams is an important component of the course, and we take it very seriously. However, we are human and may make grading mistakes. After each quiz or exam is released on Gradescope, we have a regrade request period of at least 72 hours, in order to ensure every student has the opportunity to take a close look at their graded assessment. Please keep in mind the following about regrade requests.

1. Regrade requests must be made through the appropriate form in Gradescope. Requests that are frivolous or late are a violation of course policy and will result in point deductions on the exam.
2. When making a regrade request, the student must state specifically what they believe was misgraded in the problem. Students are responsible for reading the solutions key very carefully before sending a regrade request. Do not submit a regrade request to ask how to do the problem or what was wrong with your answer (that is what the solution key is for). We give some examples of inappropriate regrade requests below.
    - "i feel like the answer key is wrong"
    - "howww"
    - "I am confused on this one"

- "how did I get 2/4" (the rubric stated the reason for each of the two 1-point deductions)
- "I lost 1 point but I think my answer is correct" (student did not view solutions key to see their answer was incorrect)

3. **It is possible for a student's grade to decrease** if the grader had originally made an error in the student's favor. This has happened on the final exam for students who were near a letter grade cutoff.
4. Regrade requests may lead the grader to regrade the full problem in question, not just a specific part. We give examples below.
   - A regrade request made for part (a) of may lead the grader to realize that they had accidentally hit the wrong rubric button and had meant to subtract points in part (b).
   - A student had a legitimate regrade request for part (a) of a problem, but the request led us to notice that the grader had made an egregious error in the student's favor in part (b) of the problem. The end result was a net decrease in the student's score.