

[Math 2552 H, H01, H02, H03, fall 2020] Syllabus

Differential Equations, Math 2552, Sections H-H01-H02-H03, 4 credit hours

Lectures: TR 12:30pm-1:45pm ET, on [Bluejeans](#) synchronously and recorded

Instructor
Zhiwu Lin

Email
zlin@math.gatech.edu

Office Hours & Location
TR 2:30pm-3:30pm ET, on [Bluejeans](#) (no recording)

Studio Information

| | | |
|-------------|---|---|
| Section H01 | MW 11m-11:5 0am ET, on BlueJeans synchronously and recorded | Zhang, Weiwei, Email: wzhang393@gatech.edu Office Hours: ??? on BlueJeans (no recording) |
| Section H02 | MW 11m-11:5 0am ET, on BlueJeans synchronously and recorded | Liu, Xiaonan, Email: xliu729@gatech.edu Office Hours: ??? on BlueJeans (no recording) |
| Section H03 | MW 9:30am-10:20am ET, on BlueJeans synchronously and recorded | Liu, Xiaonan, Email: xliu729@gatech.edu Office Hours: ??? on BlueJeans (no recording) |

General Information

Description

Various analytic solution methods of elementary differential equations. Applications of differential equations to real world problems with modeling. Qualitative studies of solutions emphasizing stability/instability.

Pre- &/or Co-Requisites

MATH 1502 OR MATH 1512 OR MATH 1555 OR MATH 1504 ((MATH 1552 OR MATH 15X2 OR MATH 1X52) AND (MATH 1522 OR MATH 1553 OR MATH 1554 OR MATH 1564 OR MATH 1X53)). We will need to do a lot of calculus (differentiation and integration) and linear algebra (solving linear systems and computing eigenvalues and eigenvectors).

Course Goals and Learning Outcomes

Upon successful completion of this course, you should be able to solve first order linear diff eqs, solve separable diff eqs, solve linear systems of diff eqs with constant coefficients, solve higher order linear diff eqs with constant coefficients, solve some real world problems by using diff eqs, analyze the stability/instability of solutions of some linear and nonlinear diff eqs, and numerical methods.

Course Requirements & Grading

There will be Online Homework (on WeBWork), 5 Quizzes, 2 Midterms, and a cumulative Final Exam.

| Test | Release | Submission | Coverage |
|-----------|--|--|----------------------------------|
| Quiz 1 | H01-H02, 09/02 (Wed) 11am ET on Canvas H03, 09/02 (Wed) 9:30am ET on Canvas | H01-H02, Due by 09/02 (Wed) 11:50am ET on Gradescope H03, Due by 09/02 (Wed) 10:20am ET on Gradescope | Lectures and Studios 08/17-08/26 |
| Quiz 2 | H01-H02, 09/16 (Wed) 11am ET on Canvas H03, 09/16 (Wed) 9:30am ET on Canvas | H01-H02, Due by 09/16 (Wed) 11:50am ET on Gradescope H03, Due by 09/16 (Wed) 10:20am ET on Gradescope | Lectures and Studios 08/27-09/09 |
| Midterm 1 | 09/29 (Tue) 12:30pm ET on Canvas | Due by 09/29 (Tue) 1:45pm ET on Gradescope | Lectures and Studios 08/17-09/21 |
| Quiz 3 | H01-H02, 10/12 (Mon) 11am ET on Canvas H03, 10/12 (Mon) 9:30am ET on Canvas | H01-H02, Due by 10/12 (Mon) 11:50am ET on Gradescope H03, Due by 10/12 (Mon) 10:20am ET on Gradescope | Lectures and Studios 09/22-10/05 |
| Quiz 4 | H01-H02, 10/21 (Wed) 11am ET on Canvas H03, 10/21 (Wed) 9:30am ET on Canvas | H01-H02, Due by 10/21 (Wed) 11:50am ET on Gradescope H03, Due by 10/21 (Wed) 10:20am ET on Gradescope | Lectures and Studios 10/06-10/14 |

| Test | Release | Submission | Coverage |
|------------|--|--|----------------------------------|
| Midterm 2 | 11/03 (Tue) 12:30pm ET on Canvas | Due by 11/03 (Tue) 1:45pm ET on Gradescope | Lectures and Studios 09/22-10/26 |
| Quiz 5 | H01-H02, 11/18 (Wed) 11am ET on Canvas H03, 11/18 (Wed) 9:30am ET on Canvas | H01-H02, Due by 11/18 (Wed) 11:50am ET on Gradescope H03, Due by 11/18 (Wed) 10:20am ET on Gradescope | Lectures and Studios 10/27-11/11 |
| Final Exam | 12/08 (Tue) 11:20am ET on Canvas | Due by 12/08 (Thursday) 2:10pm ET on Gradescope | The whole semester |

All quizzes, midterms, and the final exam are take home with time limits. The problems will be released on [CANVAS Class Website > Assignments](#). You have to solve the problems by yourself, and are not allowed to discuss problems and solutions with other people. You are to scan your solutions into a PDF file and upload to [GRADESCOPE](#) by the deadline. A tutorial for scanning PDF and uploading to [GRADESCOPE](#) can be found in the [Files](#) folder of Canvas.

For example, Quiz 1 will be released on [CANVAS Class Website > Assignments](#), on September 2 (Wednesday) 11am (H01, H02) and 9:30am (H03) Eastern Time. You have to scan your solutions of Quiz 1 into a PDF file and upload to [GRADESCOPE](#) by September 2 (Wednesday) 11:50am (H01, H02) and 10:20am (H03) Eastern Time. We do not accept late submissions.

Online Homework

Homework will be assigned on WeBWork, which will be accessed via [Canvas Class Website > Assignments](#). WeBWork assignments will be due regularly (almost weekly). The warmup assignment for the first week of class on WeBWork is just for practice and will not be graded.

Assignments will be open at least one week before they are due. Your two lowest homework scores will be dropped. No late homework will be accepted — no exceptions. Each homework assignment counts the same amount toward your grade.

WeBWork homework sets are assigned on-line and consist of exercises on a free online platform maintained by the School of Math. You are expected to understand all homework problems for all midterms and the exam. In order to increase the effectiveness of lectures, you should attempt online problems before lectures. **If you have questions regarding WeBWork, please ask on [Piazza](#).** Greg Mayer or Rebecca George will answer you.

Description of Graded Components

Your course average will be based on:

| | |
|------------------|---|
| Weighted Average | $5\%(\text{Online Homework}) + 30\%(\text{Quizzes}) + 34\%(\text{Midterms}) + 31\%(\text{Final})$ |
|------------------|---|

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

| A | B | C | D | F |
|---------|------------|------------|------------|-----------|
| 90-100% | 80-89.999% | 70-79.999% | 60-69.999% | 0-59.999% |

Course Materials

Course Text

James R. Brannan and William E. Boyce, *Differential Equations (an introduction to modern methods and applications)*, 3rd edition, John Wiley & Sons, 2015. ([Publisher's website for the text](#))

You can purchase the text at [Georgia Tech Bookstore](#).

We plan to cover Chapters 1-8 of the text.

Course Websites

- Instructor's website: <https://people.math.gatech.edu/~zlin/2552-fall-2020/2552-fall-2020.html>
- [CANVAS](#) will contain the BlueJeans links, class announcements, and the official gradebook. The exams (quizzes, midterms, and the final exam) will be released on CANVAS. Lecture slides and supplementary materials will be posted on Files folder.
- [Gradescope](#) You will submit your solutions to the exams (quizzes, midterms, and the final exam) to Gradescope. Your graded exams will be stored on Gradescope. The regrading requests should also be submitted on Gradescope.
- [Piazza \(online discussion forum\)](#): <https://piazza.com/class/kdswzn0439c7ju>
The Piazza forum is highly catered to getting your help fast and efficiently from classmates, the TAs, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza if your questions have nothing to do with your privacy. You may post on Piazza anonymously if that makes you more comfortable. Everyone in class should feel absolutely free to ask questions, discuss, help, comment, explore, and exchange ideas on Piazza.

The only restrictions I like to impose on Piazza are: **please do not discuss exam problems and solutions, do not post illegal or inappropriate content, and do not post commercial advertisements on Piazza**. Of course you are welcome to discuss exam problems and solutions with me and your TA in private.

Course Expectations & Guidelines

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. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations. Cheating includes, but is not limited to:

- Using an unapproved calculator, books, or any form of notes on tests.
- Collaborating during an online quiz or test.
- Using any third-party websites such as Chegg and CourseHero to obtain answers to graded problems.
- Copying directly from any source, including friends, classmates, tutors, internet sources, or a solutions manual.

- Allowing another person to copy your work.
- Taking a test or quiz in someone else's name, or having someone else take a test or quiz in your name.
- Asking for a regrade of a paper that has been altered from its original form.
- Using someone else's account to gain attendance or homework points for them, or asking someone else to use your account for any graded homework or attendance submission.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, 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.

Lecture Format and Attendance

All lectures will on [BlueJeans](#) synchronously and will be recorded. The attendance is not mandatory, but is highly encouraged.

Studio Format and Attendance

All studios will on BlueJeans synchronously and will be recorded. The attendance is not mandatory, but is highly encouraged.

In-Person Studio Format and Attendance

- There will be one in-person studio session (touch points) in the studio room. Tentatively it is scheduled for the last studio of the semester on 11/23 (Monday).
- This in-person session will also be on BlueJeans synchronously and will be recorded.
- The in-person attendance of this session is not mandatory.
- Unfortunately a studio room does not have enough space to accommodate a whole section at the same time, due to the social distancing requirement. If you plan to attend the in-person studio, please let us know in advance. We will try our best to accommodate you.
- This schedule of the in-person studio is tentative. It may be changed or modified, depending on the pandemic situation and other campus conditions.

NETIQUETTE:

Our course will be mainly online. Netiquette is the etiquette of online behavior. In all means of communication in this online course, you will need to follow the same rules of behavior as you would in a face-to-face course when communicating with the other students, teaching assistants, and instructors in the class. This means that you will have to respect others: negative personal comments are strictly prohibited. Please also respect your fellow classmates by turning off your microphone and web cam when appropriate. If it is appropriate to turn on your web cam, be sure that you are wearing appropriate clothing. During class sessions you may ask questions using "Chat"; however, spamming the chat or posting inappropriate content will result in your displacement from the virtual session.

HEALTH-RELATED CONSIDERATIONS:

Please see information about health-related concerns at <http://health.gatech.edu/coronavirus/students>. In particular, all students are asked to perform a self assessment prior to coming to campus each day. Please do not come to an in-person studio if you are sick.

FACE COVERINGS: Effective July 15, 2020, University System of Georgia (USG) institutions will require all faculty, staff, students, and visitors to wear an appropriate face covering while inside campus facilities/buildings where six feet social distancing may not always be possible. All members of the campus community will be provided re-usable cloth face coverings.

Face covering use will be in addition to and is not a substitute for social distancing. Anyone not using a face covering when required will be asked to wear one or must leave the area. Refusal to comply with the requirement may result in discipline through the applicable conduct code for faculty, staff or students.

Exam Procedure

- All exams (quizzes, midterms, and the final) are take-home assessments with time limits.
- Problems will be released on CANVAS at a pre-announced time.
- You will scan your solutions into a PDF file, and upload it to [Gradescope](#) by a pre-announced deadline.
- You have to solve the problems by yourself, and are not allowed to discuss problems and solutions with other people.
- Please make sure your PDF submissions are in required format (which will be specified in the exam problem files).
- During the time interval from the release time and submission deadline, either your TA or I will be on BlueJeans. If you have questions about the exam, you can join the BlueJeans meeting. We can only answer one person at a time without the presence of other people; so please leave BlueJeans once your questions are answered or if you have no questions.

Re-Scheduled/Missed Exams

NO MAKE-UP EXAMS! In general, no make-up exams (including quizzes, midterms, and the final exam) will be given and any missed exam results in a "0" score.

- If you have a valid reason to request a make-up exam, please contact Dr. Lin zlin@math.gatech.edu **as early as possible, before the release time of the exam, with reasonable written documentary evidence supporting your case.** Only extraordinary cases will be considered.
- No makeups will be scheduled after the corresponding exam has been graded and returned to other students.

Regrading Requests

Any regrading request should be submitted on [Gradescope](#), with an explanation of the reason, within two weeks of the date the graded exam has been returned to you. **Papers submitted for regrading could be adjusted up or down;** so please make sure to check the solutions before submitting a regrading request.

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectation 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.

Campus Resources for Students

In your time at Georgia Tech, you may find yourself in need of support. Below you will find some resources to support you both as a student and as a person.

Academic support

- Center for Academic Success <http://success.gatech.edu>
 - 1-to-1 tutoring <http://success.gatech.edu/1-1-tutoring>
 - Peer-Led Undergraduate Study (PLUS) <http://success.gatech.edu/tutoring/plus>
 - Academic coaching <http://success.gatech.edu/coaching>
- Residence Life's Learning Assistance Program
<https://housing.gatech.edu/learning-assistance-program>
 - Drop-in tutoring for many 1000 level courses
- OMED: Educational Services (<http://omed.gatech.edu/programs/academic-support>)
 - Group study sessions and tutoring programs
- Communication Center (<http://www.communicationcenter.gatech.edu>)
 - Individualized help with writing and multimedia projects
- Academic advisors for your major
<http://advising.gatech.edu/>

Personal Support

Georgia Tech Resources

- The Office of the Dean of Students: <https://studentlife.gatech.edu/>; 404-894-6367; Smithgall Student Services Building 2nd floor
 - You also may request assistance at https://gatech-advocate.symplcity.com/care_report/index.php/pid383662?
- Counseling Center: <http://counseling.gatech.edu>; 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):
<https://studentlife.gatech.edu/content/star-services>
 - Can assist with interview clothing, food, and housing needs.
- Stamps Health Services: <https://health.gatech.edu>; 404-894-1420
 - Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition
- OMED: Educational Services: <http://www.omed.gatech.edu>
- Women's Resource Center: <http://www.womenscenter.gatech.edu>; 404-385-0230
- LGBTQIA Resource Center: <http://lgbtqia.gatech.edu/>; 404-385-2679
- Veteran's Resource Center: <http://veterans.gatech.edu/>; 404-385-2067
- Georgia Tech Police: 404-894-2500

Statement of Intent for Inclusivity

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

Important Dates

- 08/17 (Mon) First Studio.
- 08/18 (Tue) First Lecture.
- 09/02 (Wed) Quiz 1.
- 09/07 (Mon) Official School Holiday.
- 09/16 (Wed) Quiz 2.
- 09/29 (Tue) Midterm 1.
- 10/12 (Mon) Quiz 3.
- 10/21 (Wed) Quiz 4.
- 10/24 (Sat) 4:00pm ET. Withdrawal Deadline.
- 11/03 (Tue) Midterm 2.
- 11/18 (Wed) Quiz 5.
- 11/23 (Mon) Last Studio. Review.
- 11/24 (Tue) Last Lecture. Review.
- 12/08 (Tue) Final Exam.