

## Fall 2024 - Syllabus of Differential Equations (MATH 2552)- 4 Credits - Section Q

**Instructor:** Galyna V. Livshyts

**Contact:** By email [glivshyts6@gatech.edu](mailto:glivshyts6@gatech.edu) or via Piazza; students are encouraged to avoid using Canvas messenger, since the emails will be answered faster.

**Lecture:** TR 9:30-10:45 AM online via Zoom: <https://gatech.zoom.us/j/96455139758>

**Office Hours:** Monday 8-9:30 am online via Zoom: <https://gatech.zoom.us/j/96635274506>

**TA and Studio information:** For the office hours of TAs, please refer to Canvas.

Studio section	Studio Schedule	TA information
Q 01	MW 5:00-5:50 PM in Clough UG Learning Commons 262	Manuel Fernandez <a href="mailto:mfernandez39@gatech.edu">mfernandez39@gatech.edu</a>
Q 02	MW 6:30-7:20 PM in Clough UG Learning Commons 262	Manuel Fernandez <a href="mailto:mfernandez39@gatech.edu">mfernandez39@gatech.edu</a>
Q 03	MW 5:00-5:50 PM in Skiles 311	Tobias Wang <a href="mailto:tobias.wang@gatech.edu">tobias.wang@gatech.edu</a>
Q 04	MW 6:30-7:20 PM in Skiles 171	Tobias Wang <a href="mailto:tobias.wang@gatech.edu">tobias.wang@gatech.edu</a>

**Course text book:** The textbook is available in the GT book store.

- Title: Differential Equations (an introduction to modern methods and applications), Chapters 1-8.
- Author: James R. Brannan and William E. Boyce
- Edition: 3rd edition
- Publisher: John Wiley & Sons, 2015.
- Hyperlink access to the text: Publishers website for the text.

**General information and 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- and/or Co-Requisites:** MATH 1552/MATH 15X2/MATH 1X52 and MATH 1553/MATH 1554/MATH 1564/MATH 1X53. Please refer to <https://math.gatech.edu/courses/math/2552>.

**Course Goals and Learning Outcomes:** Upon successful completion of this course, you should be able to

- solve first order differential equations,
- Solve systems of first order differential equations,
- Solve second order linear differential equations,
- Solve differential equations using Laplace transforms,
- Solve some real world problems by using differential equations,
- Analyze the stability/instability of solutions of some linear and nonlinear differential equations, and
- Solve first order differential equations using basic numerical methods.

**Grading policy:**

Online homework on webwork Two lowest HW sets of HW01-HW15 will be dropped.	5%
Quizzes (Four out of Five Better Quizzes, the Lowest One Dropped) Each quiz is 6%	24 %
Two Midterms Each midterm is 17%	34 %
Final	37 %

**Course requirements and grading:** There will be 5 Quizzes during Studio times about 30 minutes each, 2 Midterms (1 hour and 15 minutes each), and a cumulative Final Exam (2 hours and 50 minutes). These assessments are closed notes, closed text and administered in-person. Use of electronic equipments are not permitted during the assessments.

**Online Homework** Homework sets, HW00, HW 01,  $\dots$  HW15, are assigned on WeBWorK, which will be accessed via CANVAS class site  $\rightarrow$  Assignments  $\rightarrow$  WeBWork Online Homework.

- WeBWorK assignments will be due regularly (almost weekly) on Monday at 12:00 Noon.
- No late homework will be accepted.
- The warmup assignment, HW00, is just for practice and will not be graded.
- Your two lowest HW sets of HW01-HW15 will be dropped.
- Each of your best 13 HW sets counts the same amount of credit toward your grade.
- Before the deadline, you get unlimited attempts for each problem without penalty.

### Extra Credit Opportunities:

- **Lecture active participation:** Those who attend the online lectures regularly and actively participate will receive an extra 1% added to their grade. In addition, those attending 3 out of 4 lectures on November 12, 14, 19, 21 will get this credit. It will be added to the course average, affecting all borderline grades.
- **Studio attendance grade:** Students who attend more than 80% of studio sessions will receive extra credit of 1%. It will be added to the course average, affecting all borderline grades.
- **CIOS incentive score:** If the lecture class completes the course instructor and the studio opinion survey (CIOS) with a response rate of 85% or higher before 11:59 pm on December 3 (the last day of class, prior to the final examination) then an extra credit of 1% will be added onto the course average, affecting all borderline grades.

**Grading Scale:** There will be no curving. The grades will be rounded to the student's favor: in other words, if your grade is 89.1 or 89.7 it is rounded to 90 in both cases. After that, your course grade will be assigned using the following scale:

Average	{90,...,100}	{80,...,89}	{70,...,79}	{60,...,69}	{0,...,59}
Letter grade	A	B	C	D	F
Pass/Fail grade	S			F	

### Course Websites:

- CANVAS Class Site will contain class announcements and the official gradebook. It is the students' responsibility to follow the announcements on Canvas. The Assignments tab has links to WeBWork. Piazza (accessible from Canvas) will contain questions/answers to various course-related questions, and the students are encouraged to use Piazza for their enquiries. Worksheets and solutions are posted on canvas.
- Course website <https://glivshyts6.math.gatech.edu/Diff-equations.html> (in addition to Canvas) contains class lecture videos and lecture notes.
- Syllabus contains course policies, course procedures, and important dates.
- Gradescope is used to grade quizzes, midterms, and the final exam. Your graded exams will be stored on Gradescope. Regrading requests should also be submitted on Gradescope.

**Important due dates of homeworks, schedule of quizzes, midterms, and the final exam**

			2024 Fall Important dates
August 19	M	Studio	First Studio
August 20	T	Lecture	First Lecture
August 26	M	Studio	Webwork HW 00
September 2	M	Studio	Labor day, Webwork HW 01
September 4	W	Studio	Quiz 1
September 9	M	Studio	Webwork HW 02
September 16	M	Studio	Webwork HW 03
September 18	W	Studio	Quiz 2
September 23	M	Studio	Webwork HW 04
September 30	M	Studio	Webwork HW 05
October 1	T	Lecture	Midterm 1, rooms Skiles 249, 254
October 7	M	Studio	Webwork HW 06, HW 07
October 9	W	Studio	Quiz 3
October 14	M	Studio	Fall break, Webwork HW 08
October 15	T	Lecture	Fall break
October 26	S	before 4pm	Last day to withdraw with a W
October 28	M	Studio	Quiz 4, Webwork HW 09, HW 10
November 4	M	Studio	Webwork HW 11, HW 12
November 7	Th	Lecture	Midterm 2 rooms Skiles 249, 254
November 18	M	Studio	Webwork HW 13
November 20	W	Studio	Quiz 5
November 25	M	Studio	Webwork HW 14
November 27	W	Studio	No class, Thanksgiving break
November 28	R	Lecture	No class, Thanksgiving break
December 2	M	Studio	Webwork HW 15
December 3	T	Lecture	Exam review/Final instruction day
Monday December 9 at 8-10:50am; room TBA (Click the link for final exam matrix)			

**Digital learning days (DLD):** In cases where campus may be physically closed due to events such as inclement weather, a digital learning day may replace in-person studio classes. If the digital learning day occurs on a

- studio day, then a recording will be posted for students to watch asynchronously (before/on/after the DLD).
- quiz day, then that quiz will be rescheduled to another studio day.
- midterm exam day, then a recording will be posted for students to watch asynchronously, and that exam will be rescheduled to another lecture day.

### **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 Techs 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:
  - Collaborating during an online quiz or test.
  - Using any third-party websites such as Chegg and CourseHero to obtain answers or hints 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 elses 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 elses 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 <https://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.

- **Netiquette:** Our course has a significant online component. Netiquette is the etiquette of online behavior. In all online interactions, you will need to follow the same rules of behavior as you would in an in-person meeting with the other students, teaching assistants, and instructor. 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 the sessions you may unmute yourself to ask questions; however, spamming the chat or posting inappropriate content will result in your displacement from the virtual session.
- **Health-Related Considerations:** If you test positive for Covid-19, begin to have symptoms of Covid-19, or are not up to date with your Covid19 vaccinations and are exposed to someone with Covid-19, you must take immediate action for your own health and for the safety of others. See <https://health.gatech.edu/coronavirus/isolation-quarantine> for more info about Isolation and Quarantine.
- **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 email me as early as possible, before the exam, with a reasonable written documentary evidence supporting your case. Only extraordinary cases will be considered.
  - In the case of serious illness or family emergency, please contact the Dean of Students. They will verify the case and communicate with us if necessary.
  - Students who are absent because of participation in a particular religious observance will be permitted to make up the work missed during their absence with no late penalty, provided the student informs me via email of the upcoming absence, in writing, within the first two weeks of class, and provided the student makes up the missed material within the timeframe established by the course instructor.
  - No makeups will be scheduled after the corresponding exam has been graded and returned to other students.

- If you miss (excused absence) both the midterm and make-up, then the average of another midterm and final will replace the missed one. Note that Midterms have 2 make up opportunities which must be considered. This is only good for one midterm. If more than one midterm and make-up midterm are missed, then you will receive a zero for the subsequent missed midterm.
- **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.
- **Exercises:** Exercises will be assigned on the Course Schedule Webpage. These exercises are different from the WeBWork Online Homework on CANVAS and are not collected. I do strongly suggest you to attempt all of the assigned exercises. In order to get a good understanding of the course material, the minimum work you need to do consists of four parts: read the text, review the examples discussed in lectures and studios, do online homework, and solve exercise problems.

## ADDITIONAL HELP

- Additional Help in the **Math Lab:** Asking questions is a key to success! Free walk-in help is available Monday-Friday in the Math Lab for 1000-3000 level courses. You can view the schedule at <https://tutoring.gatech.edu/drop-in/>. The Math Lab is located in Clough 280.
- 1-to-1 and Small Group Tutoring with UTAs: Free 1-to-1 and Small Group Tutoring in-person is available for 1000 and 2000 level classes. Tutoring is available with any UTA by appointment here: **UTA Tutoring** and will be located in Skiles 230
- PLUS Sessions for MATH-2552
  - TBD
- **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 the Catalog 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.

- **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.

**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**

- Drop-In Tutoring/MathLab <https://tutoring.gatech.edu/drop-in/>
  - Center for Academic Success <http://success.gatech.edu>
    - \* 1-to-1 tutoring <https://tutoring.gatech.edu/tutoring/>
    - \* Peer-Led Undergraduate Study (PLUS) <https://tutoring.gatech.edu/plus-sessions/>
    - \* Academic coaching <https://advising.gatech.edu/academic-coaching>
  - Residence Lives Learning Assistance Program <https://housing.gatech.edu>
    - \* Drop-in tutoring for many 1000 level courses
  - OMED: Educational Services <https://omed.gatech.edu/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:** The Office of the Dean of Students: <https://studentlife.gatech.edu/>; 404-894-2565; Smithgall Student Services Building 2nd floor
  - **Counseling Center:** <https://mentalhealth.gatech.edu/>; 404-894-2575; Smithgall Student Services Building 1st floor
    - Services include testing and assessment, referral to support services, short-term individual counseling, group counseling, couples counseling, crisis intervention, as well as mental health workshops, and consultation for faculty and staff, family and friends of Tech students.



- Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2575.
- 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, womens health, psychiatry, immunization and allergy, health promotion, and nutrition
- OMED: Educational Services: <http://www.omed.gatech.edu>; 404-894-3959
- Womens Resource Center: <https://womenscenter.gatech.edu/>; 404-385-0230
- LGBTQIA Resource Center: <http://lgbtqia.gatech.edu/>; 404-385-4780
- Veterans Resource Center: <http://veterans.gatech.edu/>; 404-385-2067
- Georgia Tech Police: <https://police.gatech.edu/>; 404-894-2500

**Make-up schedule for the assessments**

Assessment	Make up on	Make up time	Location
Make up Quiz 1	September 6 (Friday)	1:00 PM -1:25 PM	Room 311 in Skiles
Make up Quiz 2	September 20 (Friday)	1:00 PM - 1:25 PM	Room 311 in Skiles
Make up Midterm 1	October 4 (Friday)	1:00 PM - 2:30 PM	Room 311 in Skiles
Make up Quiz 3	October 11 (Friday)	1:00 PM - 1:25 PM	Room 311 in Skiles
Make up Quiz 4	November 1 (Friday)	1:00 PM - 1:25 PM	Room 311 in Skiles
Make up Midterm 2	November 15 (Friday)	1:00 PM - 2:30 PM	Room 311 in Skiles
Make up Quiz 5	November 26 (Tuesday)	11:30 AM -11:55 AM	Room 311 in Skiles