MATH 1551 DIFFERENTIAL CALCULUS

GEORGIA TECH EUROPE

COURSE SYLLABUS

Updated on Feb 3, 2026

Welcome to Differential Calculus! This course is designed to introduce you to some fundamental concepts of single variable Calculus. All our students play an important role in our educational mission.

Course Description

Course prefix : MATH **Course number :** 1551 **Section :** R01 (Lecture)

Semester : Fall **Academic Year :** 2026

Course Description : Differential Calculus

Differential calculus including applications and the underlying theory of limits for functions and sequences.

Course Meeting Times : M, T, W 8:25 – 9:15 am

Instructor Contact Information

Instructor First Name : Hyun Jeong **Instructor Last Name :** KIM **Office**: 303

E-mail: hkim3224@gatech.edu

Textbook

Calculus: Early Transcendentals, 14th ed. by G. B. Thomas Jr. Pearson. ISBN 978-1292253220. Select topics from chapter 1, 2, 3, and 4 will be covered.

MyMathLab Course Information: Homework assignments will be posted on MyMathLab which can be accessed through Canvas. You will need to purchase a code for MyMathLab in order to complete the on-line homework assignments. See the registration instruction posted on Canvas. You can access the site through Canvas.

MyMathLab comes with an entire electronic version of the textbook; thus, it is not necessary to purchase a hardcopy of the textbook unless you prefer to do so. You may purchase a MyMathLab code either from the bookstore or on-line at www.pearsonhighered.com. There are 18 months (Three semesters) code and 18 weeks (one semester) code. If you don't think you will need it back in Atlanta, buy 18 weeks code.

Prerequisite, Learning Outcomes and Topics

Prerequisites:

Math SAT Score of 660 **or** ACT 28 **or** MATH 1113 Precalculus with a grade of C or better **or** Math 1499 (Concurrent enrollment ok). Credit not awarded for both MATH 1551 and MATH 1501, MATH 1503, or MATH 1550.

The primary goals of this course are to
1. explore fundamental concepts of single variable calculus
2. explore the solution of problems from a mathematical perspective, and to
3. help prepare students to succeed in upper level math, science, engineering and other courses that require calculus.

Learning objectives :

- **Construct** mathematical expressions and graphs involving functions and their derivatives.
- **Compute** mathematical quantities using differential calculus and **interpret** their meaning.
- **Analyze** mathematical statements and expressions (for example, to assess whether a particular statement is accurate).
- **Write** logical progressions of precise statements to justify and communicate mathematical reasoning.
- **Apply** calculus concepts to solve real-world problems such as optimization and related rates problems.

Some of the topics that are explored in this course include the following.

- Basic calculus concepts such as limits, derivatives, optimization.
- The graphing of functions using calculus.
- The use of differential calculus to solve physics, geometry, and optimization problems.

Assessments & Information

HOMEWORK: Homework will be assigned on-line every week via **MyMathLab**. Each homework will be mostly due on **Tuesdays** at 11:59 PM (except for midterm weeks and public holidays-see all the dates on the last page).

Math is not a spectator sport! Homework is an essential part of the course; the only way to learn math is by doing math.

a. You are expected to understand **all** homework problems for the exams and quizzes. We strongly recommend working homework problems out completely on paper even though that work is not graded-this is your chance to build good habits in your work and ensure you understand every step.

b. ***Late homework will be accepted with 20% deduction for each day past the due date.***

c. There are 14 weekly homework. 12 best weekly homework scores will be counted up to 100% of homework grade (equivalent to 10 pts of the final grade) and the other two weekly homework will be given as up-to-1% bonus to your final exam (not to exceed 100%).

d. You are very welcome to **collaborate with other students on solving homework problems (and during Studio)** ; in fact, we encourage you to do so. Talking with others gives you a chance to consider issues you might not have thought of yourself and often improves your understanding. You learn the best when you teach someone. However, it is important that you understand the homework yourself by the end, or quizzes and exams will be of extreme difficulty. Of course, it is ***always*** unacceptable to copy a solution from any source or to look up answers online.

PARTICIPATION: Attending class is important. Class attendance and participation for both lectures and studios will be recorded and scored on a 0-2.5 scale. The scale is determined as follows: 2.5 points for above 90% attendance for both Lecture and Studio, 2 points for above 80% attendance for both Lecture and Studio, and 1 point for above 80% in one and 80-60% in the other, and 0 otherwise. The participation grade will be added onto the final average with a possible 0.5 bonus at the end of the term, affecting all borderline grades. Late arrivals and early departure will be also noted and three lates count for one absence.

QUIZZES: There will be 4 quizzes of 20 minutes on Wednesdays. Tentative dates are Sep 2, Sep 16, Oct 14 and Nov 4. **One** lowest quiz score will be dropped. Each quiz is graded out of 33 points and the total quiz grade out of 100 consists of three best quizzes plus 1 point bonus, which is 20% of the final grade – see below the distribution table.

MIDTERMS: There will be 2 midterms of 50 minutes on Tuesdays. Tentative dates are Sep 29 and Nov 17. There's no dropping for midterm. Each midterm is graded out of 50 points and the total midterm grade out of 100 consists of 60% of the better midterm + 40% of the other, which is 30% or 38% of the final grade - see below the distribution table.

Important : The dates for all the exams are already published. Please do not make any plan for travel for these dates as no make-up or earlier tests will be allowed! Missing test will be marked as 0.

FINAL EXAM: The final exam will cover all course materials and will be administered during the final exam period (the exact date will be announced later.) for 2 hours and 50 minutes. All students must take the final examination and should not plan for travel during the final exam period before all the exam dates are fixed. **No earlier or late exam will be allowed**. If you have a written excuse, you will be given **a make-up on the last day of the final exam period with all the others who need a make-up**. These dates are NOT negotiable as these are organized by school, not by me.

Grades

Final grades will be calculated using whichever of the following weights yields the higher grade.

Assessment	Weight 1	Weight 2
Participation	2% (possible 0.5pt bonus)	2% (possible 0.5pt bonus)
MML Homework	10%	10%
3 best Quizzes	20%	20%
2 Midterms (Better midterm 60% + The other 40%)	30%	38%
Final Exam	38%	30%

CIOS Bonus: When the participation to the survey for both Lecture and Studio is above 85%, there will be 2% bonus awarded to the final exam score (not to exceed 100%).

A **midterm grade** will be assigned around **Oct 5**. A satisfactory grade will be assigned to all students with a midterm average of 70% or higher.

Letter grades will be determined based on the usual intervals. **A**: 90% and higher, **B**: [80%, 90%), **C**: [70%, 80%), **D**: [60%, 70%), **F**: [0%, 60%). For example, a final grade of 89.99% is converted into a B, a final grade of 79.99% is converted into a C, and so on. There will be NO changes to these intervals because there will be an appropriate curve or make-up test depending on the average for each test. A test score does not exceed 100 after a curve. No individual curve, extra credits, or make-up exam (except for justified absences.) You cannot move points from a test to another test. All test results remain independent. Please do NOT email me asking for extra credits.

Expectations

Students

Students are expected to attend lectures and recitations and behave at all times in a respectful manner to their instructor, teaching assistants, and fellow students. Students are expected to study the subject matter outside of class time, review this syllabus, review their graded work in a timely manner for potential marking errors and to review where mistakes were made (if any), and ask for help when needed. Students are responsible for obtaining any announcements or materials posted on Canvas, sent by email or communicated orally in class.

Instructor

As your instructor, my role is to facilitate interactive lectures, coordinate with teaching assistants to grade student work and facilitate learning activities, provide students with assessments that both develop and measure their understanding and knowledge of the subject matter, provide feedback on their performance, provide solutions to midterms, and be available for assistance when requested.

Tips for Success

To succeed in Math class, the minimum work you need to do is: Read Course Slides and review examples done in class thoroughly. You should try all the examples with blank slides without solutions and then compare with lecture notes to make your solution complete – this step is important. And then try Review worksheet questions done in Studio to see how all the formulas are applied. Do homework and practice with the rest of the questions on the worksheets.

Most importantly, as soon as you find the course a bit challenging, you should use office hours **regularly** not to get behind. If you find some precalculus lessons challenging, you are very welcome to attend Math1499 Studio as this course will go parallel with Math1551.

Tests Policies

Tests Procedures

- Books, notes, cell phones, and calculators are NOT allowed during tests.
- Students may have something to write with and an eraser when taking tests.
- Unless students are asked to use a particular method or theorem, they are allowed to use any approach to solve any problem they are given on any test.
- Unless indicated otherwise, students must adequately justify their reasoning for full marks.
- Marks can be taken off in a test for not using the correct notation.
- The tests are comprehensive.
- Students who are unable to take any test for any reason are responsible for notifying their instructor prior to the exam and as soon as possible.
- Tests will be returned to students in class.

Additional Final Exam Procedures

Students take their final exam in the room where they have lectures (as per institute policy). The duration, date, and time of the final exam for local students is listed on the registrar website: http://www.registrar.gatech.edu/registration/exams.php Note that the schedule of the final exam is non negotiable.

Re-grade Requests for Tests

1) If any of your work has been graded in error, you should contact your **instructor** as soon as possible.
2) Teaching assistants are not permitted to handle re-grade requests.
3) Should you wish to have your work re-graded, do not change or add to the work on your paper.
4) A re-grade request can only be submitted if you did something correct that was marked as incorrect.
5) Re-grade requests **must be requested within two weeks** after the work has been returned to you.
6) You must check your answers with the solutions before submitting such a request.
7) To submit a re-grade request, you must send your instructor an email from your GT email account that contains your first and last name, the midterm you are referring to, the question(s) you are referring to, and a description of what was graded incorrectly.

Illnesses, Emergencies, Absences

Students who will miss a midterm or final exam due to a university-sponsored event or athletics should provide their instructor with the official documentation in advance. Any student who misses a test, with reasonable explanation, can write a make-up. Students must notify their instructor as soon as they can to make necessary arrangements.

Re-Scheduled/Missed Exams

NO MAKE-UP EXAMS! In general, no make-up exams 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 me as early as possible. Only extraordinary cases will be considered.
- In the case of illness and emergency, please contact the Office of Dean of Students immediately. The Dean's office will verify the case, determine the severity of the problem, and then interact with the instructor if necessary.
- Requests for student organization excused absences must be made no later than two weeks prior to the date of the event. No late requests will be honored. Please have your advisor send me a written notice or an e-mail.
- 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 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.
- If you have off campus interviews for jobs or graduate/professional schools on the test dates, please contact me as early as possible with a supporting document.

Class Policies

Attendance In the event of an absence, you 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 and may result in your removal from the classroom. Please show courtesy to your fellow classmates and instructor by adhering to the following class rules.

- Come to class **on time** and stay for the entire class period. Late arrivals and early departures will be marked as Late on Canvas.
- Refrain from conversing with your fellow students while the instructor is lecturing, but you are encouraged to discuss math with your fellow students when invited to do so.
- Put away any reading materials unrelated to the course.
- **No laptop or cell phones are allowed on the tables**. Please keep them in your bag as these are distraction to yourself and others.
- **Please do not bring food to eat during lectures**. No food is allowed in the classroom as it is GT-Europe policy. You may bring your water.

Academic Dishonesty

All students are expected to comply with the Georgia Tech Honor Code (see http://www.policylibrary.gatech.edu/student-affairs/code-conduct). Any evidence of cheating or other violations of the Georgia Tech Honor Code will be submitted directly to the Dean of Students. Cheating includes, but is not limited to the following.

Using a calculator, cell phone, books, or any form of notes on exams.

Copying directly from **any** source during an exam, including friends, classmates, or a solutions manual.

Allowing another person to copy your work. Taking a test using someone else's name or having someone else take a test in your name.

Asking for a re-grade of a paper that has been altered from its original form.

Using someone else's name to gain participation points for them, or to take tests for them, or asking someone else to use your identity for any graded or participation submission.

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 ADAPTS office to discuss the appropriate procedures. More information is available on their website, http://www.adapts.gatech.edu

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 Outcomes:

- 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

Campus-Wide Dates

(please check with Registrar for possible updates)

Aug 19 (Wednesday) First day of class

Oct 05 Progress Report Deadline

Oct 26 – Nov 01 Fall Break

Nov 30, Dec 01 Final Instructional Class days

Dec 02 Reading Day

Dec 03, 10 Reading periods 8:00 am to 2:40 pm

Dec 03 - 10 Final Exams Session

For further information on campus-wide dates see http://www.registrar.gatech.edu/calendar

The date and time of the final exam is scheduled by the registrar.

TENTATIVE SCHEDULE

Week	Section Coverage in Lecture	Tests	Important Dates
Week 1 Aug 19, 21	Mon- Syllabus, 1.1-2 : Functions, graphs, Fri- 2.1 : Rate of Change, Pretest	Prerequisite Test	Class on Friday Aug 21 exceptionally Prerequisite test on Friday
Week 2 Aug 24, 25, 26	2.2 : Limits of functions 2.4 : One-sided limits WS 2.1, 2.2, 2.4		HW 1 Tue Aug 25
Week 3 Aug 31, Sep 1,2	2.6 : Limits involving infinity, Asymptotes 2.5 : Continuity WS 2.6, Quiz 1	**Quiz 1** on Sections 1.1-2, 2.2, 2.4	**Quiz 1 on Wed Sep 2** HW 2 due Sep 1
Week 4 Sep 7, 8, 9	3.1 : Tangent lines, derivative at a point 3.2 : Derivative as a function WS 2.5, 3.1, 3.2		HW 3 Tue Sep 9
Week 5 Sep 14, 15, 16	3.3 : Differentiation Rules 3.6 : Chain Rule WS 3.3, Quiz 2	**Quiz 2** on Sections 2.6, 2.5, 3.1, 3.2	**Quiz 2 on Wed Sep 16** HW 4 Tue Sep 15
Week 6 Sep 21, 22, 23	3.11 : Linearization, Differential 4.7 : Newton's Method WS 3.6, 3.11, 4.7		HW 5 Tue Sep 22
Week 7 Sep 28, 29, 30	Review Midterm 1 4.1 : Extreme values on closed intervals	**Mid 1** on Sections 1.1-2, 2.1, 2.2, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.6, 3.11, 4.7	**Mid 1 on Tue Sep 29** HW 6 **Mon** Sep 28
Week 8 Oct 5, 6, 7	4.3-4.4a : First and second derivative test 4.3-4.4a : First and Second derivative test WS 4.1, 4.3, 4.4a		HW 7 Tue Oct 6
Week 9 Oct 12,13,14	4.6 : Applied optimization 1.3 : Trig functions WS 4.6, Quiz 3	**Quiz 3** on Sections 4.1, 4.3-4.4a	**Quiz 3 on Wed Oct 14** HW 8 Tue Oct 13
Week 10 Oct 19, 20, 21	3.5 : Derivative of trig functions 3.4 : Derivative as a rate of change WS 3.5, 3.4		HW 9 Tue Oct 20
Week 11	Oct 26– Nov 1	NO CLASS	FALL BREAK
Week 12 Nov 2,3,4	3.7 : Implicit differentiation 3.10 : Related rates WS 3.7, Quiz 4	**Quiz 4** on Sections 4.6, 3.5, 3.4	**Quiz 4 on Wed Nov 4** HW 10 Tue Nov 3
Week 13 Nov 9, 10,13	1.6 : Exp / Log functions 3.8 : Derivative of inverse functions and Logarithms WS 3.10, 3.8	Nov 11(Wed) Bank Holiday	**Class on Nov 13 (Friday)** HW 11 Tue Nov 10
Week 14 Nov 16, 17, 18	Review Midterm 2 1.5, 3.9 : Inverse trig function	**Mid 2** on Sections 4.1, 4.3-4.4a, 4.6, 3.5, 3.4, 3.7, 3.10, 3.8	**Mid 2 on Tue Nov 17** HW 12 **Mon** Nov 16
Week 15 Nov 23, 24, 25	4.4b : Curve sketching using concavity 4.2 : Mean value theorem WS 3.9, 4.2		HW 13 Tue Nov 24
Week 16 Nov 30, Dec 1	WS 4.4b Review for Final Exam	Last instructional Day	HW 14 due Dec 1 (**No late submission allowed**)