

MATH 1551, Differential Calculus, Course Syllabus

Welcome to Differential Calculus. This course is designed to introduce you to some fundamental concepts of single variable Calculus. All of our students play an important role in our educational mission. We hope that you will find this to be a useful, fundamental course for your future studies.

Please note: items on the syllabus are subject to change. Any changes to the syllabus will be relayed to the students in lecture and through T-Square.

Goals, Learning Objectives, and Topics

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.

For example, with respect to item 3, we might discuss effective study strategies during lecture.

Learning objectives are statements that articulate what students are expected to be able to do in a course. The learning objectives for this course are as follows.

- 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.

For example, students will be expected to **construct** related rate equations to **compute** the value of a variable and **interpret** the resulting value in the context of the given problem.

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.

Course description, times and textbook

Course Title: Differential Calculus

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

Prerequisites: Math SAT score of 600 or above, or equivalent Math ACT, or MATH 1113 Precalculus.

Course Meeting Times: Lecture meets Monday, Wednesday and Friday 9:30 ~ 10:45 Howey N210.

Text: Thomas, Calculus: Early Transcendentals, 13th ed. MyMathLab is required and contains an electronic version of the textbook. Access codes and registration information are available on our course t-square page. You can access our MyMathLab course at mymathlab.com. We will cover many of the topics in chapters 1-5.

Course Websites

Course Information: t-square.gatech.edu (required)

Textbook/Homework Access: <http://www.mymathlab.com> (required)

On-line Discussions: <https://piazza.com/class/j6ghw0sy4we5uh> or approach via T-square (highly recommended)

Instructor and Contact Information

Instructor: Kisun Lee

Office Location: Clough 248

Office Hours: Monday, Wednesday 11:00 ~ 12:00 or by appointment

E-mail: klee669@gatech.edu

Lecture Assistant: McKean, Stephen

Office Hours and Location: Thursday 3:00 ~ 5:00 pm in Clough 280

E-mail: mckean@gatech.edu

MyMathLab Course Information:

We will be utilizing MyMathLab (MML) for homework through a joint code for the Thomas Calculus text and the Lay Linear Algebra text. In order to register, you will need our course id listed below.

MyMathLab Course ID: lee32136

Important notes on MML:

- If you already have an account on MyMathLab 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, select the option to add a new course, and enter our course ID.
- If you already have a MyMathLab account that used either the Thomas or the Lay textbook 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, or if your account is over 18 months old, you will need to purchase a new code for our course. Please refer to the registration document, located in the “Resources” section on t-square, to create your new account.

When signing up for MyMathLab, it will be immensely helpful to me (for grading purposes) if you will set your STUDENT ID to your USERID for the GT system (i.e., your T-square USERID, as in "gburdell3", 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 on-line while registering at <http://www.mymathlab.com>. If you prefer to own a hardcopy of the text, the bookstore offers packages of MyMathLab combined with a loose-leaf or hardcover version of the Thomas textbook that is less expensive than purchasing the text and code separately.

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! Possible ISBNs for this text are: 1323131760, 1323132112, 132313204X, 1323132104, or 1323132120.

Course Organization

This course will consist of lectures meeting three times per week for 50-minute periods. You are required to attend all scheduled sessions at all times. After the first week of class, Fridays will be reserved for review and testing.

Course Requirements and Grading

HOMEWORK: Homework will be assigned on-line and will consist of exercise problems on MyMathLab. You are expected to understand all homework problems for the tests. Exercises on MyMathLab will be due on Thursdays at 11:59 PM (except during class recesses or as announced in class). The lowest homework grade will be dropped. Late assignments are allowed with a penalty of 20% per day.

I will also expect you to read ahead to prepare for each class lecture.

PARTICIPATION: Attending class is important. Class attendance and participation will be recorded and scored on a 0-2 scale. The purpose of participation activities is to encourage participation and active learning, gauge attendance, develop community among the students, offer feedback to the

instructor on course activities, and help students better prepare for quizzes and midterms.

Participation activities will not be held in the first and last weeks of the course, and will only be graded for participation (not for accuracy). Examples of participation activities that will be used throughout the semester are: paper-based work (e.g. minute paper, individual problem solving, group work) or online work: piazza survey, etc.

QUIZZES: A weekly quiz will be given each Friday beginning on the second week of class, except on test days. Quizzes will be administered during the last 15 minutes of class, and will be based on reading material, topics covered in lecture and the homework assignments due that week. The lowest quiz grade will be dropped. No book, notes, calculators, cell phones, or other electronic devices are allowed during the quizzes.

MIDTERM EXAMS: We will have three 75-minute tests during the term. Midterms will last for entire class period. Tests will be administered on the following days:

- Test 1: June 1st
- Test 2: June 22nd
- Test 3: July 13th

No books, notes, calculators, cell phones, or other electronic devices are allowed during the tests.

FINAL EXAM: The final exam will cover all course materials and will be administered on Friday July 27, from 8:00 am-10:50 am. All students must take the final examination.

Your final average will be computed as the highest of the following two options:

Option	Count all tests	Halve Lowest Test
Participation	2%	2%
Homework	8%	8%
Quizzes	12%	12%
Midterms (16% each)	48%	40%
Final Exam	30%	38%

Letter grades will be determined based on the following intervals. **You will be guaranteed a minimum of the following scale:**

A: 90% and higher, **B:** [80%, 90%), **C:** [70%, 80%), **D:** [60%, 70%), **F:** [0%, 60%).

Any changes to these intervals would only be made after the final exam at the instructor's discretion and students should not expect any changes to the intervals. The cut offs could only be lowered.

Class Policies

Attendance: You are expected to come prepared and actively participate in every lecture session. 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 and/or loss of participation points for that day.

Please show courtesy to your fellow classmates and instructor by adhering to the following class rules:

- Turn off all laptops, cellular phones, i-pods and other electronic devices, unless you have a documented need to use such devices for note-taking, during class.
- Come to class on time and stay for the entire class period.
- Except during group work, please refrain from conversing with your fellow students.
- Put away any reading materials unrelated to the course.

Academic Dishonesty: All students are expected to comply with the Georgia Tech Honor Code (the honor code can be found at <http://www.osi.gatech.edu/plugins/content/index.php?id=46>). 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:

- Using a calculator, books, or any form of notes on quizzes or tests.
- Copying directly from any source, including friends, classmates, tutors, internet sources (including Wolfram Alpha), or 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 clicker to gain attendance points or to take quizzes or tests for them, or

asking someone else to use your clicker for any graded or attendance submission.

Regrading of Papers: If a problem on your test or quiz has been graded in error, you must submit a regrade request in writing, along with your paper, no more than one week after the papers have been returned in class. Should you wish to have your paper regraded, *do not change or add to the work on your paper!* If you must write on your returned paper, be sure to write in a different color ink and clearly indicate what you have added. A regrade request can only be submitted if you have done something CORRECT on your test that has been marked as incorrect. You MUST check your answers with the solutions BEFORE submitting such a request.

Make-Ups: In an emergency situation, I may allow a make-up quiz or test if I am notified prior to the exam and provided with a reasonable, written confirmation of your absence. Any make-ups must be completed before the corresponding quiz or test has been graded and returned to other students. If you will miss a test due to a university-sponsored event or athletics, please provide me with the official documentation in advance.

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>. Please also make an appointment with me to discuss your accommodation, if necessary.

Calculators: While you may need a scientific calculator for help with some of the homework problems, the use of calculators is NOT ALLOWED on in-class assessments.

Announcements: I will frequently update the class pages with class information and materials. You are responsible for obtaining any announcements or materials placed on my web page, MyMathLab, or T-square. Though not required, it is also to your advantage to join our class page on Piazza (www.piazza.com) so you can view/participate in course-related discussions.

Additional Help: Asking questions is a key to success! Please stop by my office hours whenever you have questions. Free help is also available Monday-Thursday afternoons in the Math Lab, located on

the second floor of Clough Commons.

Important Dates throughout the term:

May 14 -- First Day of Classes

May 28 -- Official School Holiday (Memorial Day)

June 1 -- Midterm #1

June 22 -- Midterm #2

June 30 -- Last day to withdraw with a grade of "W"

July 3 – 4 – School Holiday (NO CLASS)

July 13 -- Midterm #3

July 23 -- Last Day of Class

July 27 – Final Exam at 8:00 am - 10:50 am

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

Tentative Course Schedule and Assessments

Week and Dates	Section Coverage	Topics
Week 1 May 14 - 18	Sections 1.1-1.2 Sections 1.3-1.6	Functions, graphs, combining functions. Trigonometric, Exponential, Logarithmic and Inverse Functions
Week 2 May 21 - 25	Sections 2.1 - 2.4	Limits. One-sided limits Quiz 1 on Friday
Week 3 May 28 – June 1	Memorial Day on Monday Section 2.5	Continuity Midterm 1 on Friday.
Week 4 June 4 - 8	Sections 2.6, 3.1 – 3.2	Infinite Limits. Rates of Change Secant and Tangent Lines. Definition of Derivative Quiz 2 on Friday
Week 5 June 11 - 15	Sections 3.3 - 3.5	Power, Product, and Quotient Rules. Rates of Change, Derivatives of Trigonometric Functions. Quiz 3 on Friday
Week 6 June 18 - 22	Section 3.6 – 3.8	Chain Rule, Implicit Differentiation. Derivatives of Inverse and Logarithmic Functions Midterm 2 on Friday
Week 7 June 25 - 29	Sections 3.9 – 3.11	Inverse trigonometric functions, Related Rates. Quiz 4 on Friday
Week 8 July 2 - 6	School Holiday on Wednesday Sections 4.1 - 4.2	Extreme Values. The Mean Value Theorem Quiz 5 on Friday
Week 9 July 9 - 13	Section 4.3 – 4.5 Test Review	First and Second Derivative Tests, Curve Sketching Midterm 3 on Friday
Week 10 July 16 - 20	Sections 4.6 – 4.8	Optimization Problems, Newton's Method, Anti- derivatives. Quiz 6 on Friday
Week 11 July 23 - 27	Final Instructional Days of Class on Monday.	<i>Final on Friday, July 27 8:00 – 10:50 am</i>