COURSE SYLLABUS
MATH 1552, INTEGRAL CALCULUS
SCHOOL OF MATHEMATICS
GEORGIA INSTITUTE OF TECHNOLOGY

Welcome to Integral Calculus! This course is designed to introduce you to the fundamental concepts of integration and infinite series. 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.

Course Description and Learning Outcomes

Course Title: Integral Calculus

Learning Objectives:
- Students will understand the geometric concept of a definite integral and learn how to approximate the integral using Riemann sums.
- Students will be able to evaluate indefinite and definite integrals algebraically using various integration techniques, including substitution, integration by parts, trigonometric substitution, trigonometric identities, and partial fractions.
- The idea of convergence will be applied to improper integrals and infinite series.
- Given an infinite series, students can analyze the function to determine if the series converges by applying an appropriate convergence test (divergence, comparison, integral, ratio or root).
- Taylor series will be constructed for various functions and will be applied to numerical approximation problems and definite integrals.
- Students will understand the proper usage of mathematical notation in relation to the above topics.

Textbook: Thomas, *Calculus: Early Transcendentals,* 14th ed. We will discuss topics in chapters 5, 6, 7, 8, and 10.

Important Websites:
    Course Information: http://canvas.gatech.edu (*required*)
    Textbook/Homework Access: http://www.mymathlab.com (*required, access through Canvas*)
    On-line Discussions: www.piazza.com (*highly recommended, access through Canvas*)
    Graded papers: www.gradescope.com (*required, access through Canvas*)

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. Our MML course is linked to Canvas. Please login to your Canvas account, then go to the "My Lab and Mastering" tool on the left-hand menu. From the My Lab page, you can login to, or create, your MyMathLab account to access our course. You should not need to enter a course ID.

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 texbook in the past 18 months, but you were unable to add our course using the previous step, *please send an email to:* gtmylabmath@gmail.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

Your instructor will send a list of student names to the Pearson support team regarding your account status and requesting new codes. In the meantime, you can access your 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 Canvas, to create your new account.

When signing up for MyMathLab, it will be immensely helpful (for grading purposes) if you will set your STUDENT ID to your USERID for the GT system (i.e., your Canvas 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: 9781323835029, 132383768X, or 9781323837689.

Course Organization

This course will consist of lectures and studios. You are required to attend all scheduled sessions at all times. The Center for Academic Success will also provide our class with a PLUS ("Peer Led Undergraduate Study") leader. PLUS sessions will also meet twice per week. These sessions are optional, but strongly encouraged.

Course Requirements and Grading

The grade will be determined by classwork and exams.

CLASSWORK

Classwork includes *homework* and *class participation*. There are 190 possible points on the chart below. The classwork average will be computed by taking the total number of points earned, and dividing by 1.8 (essentially, you can miss up to 10 total points and still have a 100% classwork average). Averages over 100% will be allowed, and will be the only extra credit opportunity offered to students.

Homework (13 total)	10 points each	130 points
Studio (13 total weeks)	2 points each week	26 points
Lecture (13 total weeks)	1 point each lecture	34 points

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 and quizzes. In order to increase the

effectiveness of studio, you should attempt the problems **before** the weekly studio sections. Exercises on MyMathLab will be due every Tuesday at 11:59 PM (except during class recesses or as announced in class). Each assignment contains problems that count toward the grade, and extra practice problems to help you prepare for the tests. **Late homework will be accepted with a 20% deduction per day**. Please note: *the final graded homework assignment will be due on Tuesday, April 14.*

LECTURE PARTICIPATION: Lecture attendance will be determined by submissions of one page of your handwritten notes to Gradescope by 11:59 PM each lecture day, beginning on the second week of class. Please be sure to upload your notes for your assigned lecture instructor in order to receive these participation points.
Please note: it is a violation of the code of conduct to submit a participation assignment if you are not physically present in class, or to submit another student's notes. Each day, we will count the class attendance. If the number of submissions exceeds the classroom count, then that class period will not count toward the overall class participation grade. Any individual student who is caught violating this policy will receive an overall 0% participation average for the semester.

PROBLEM BASED STUDIOS: Studios will be run in a partially "flipped" classroom environment. That means: the TAs will expect that you have attended lecture and reviewed the textbook before class, and they will not lecture on the course material. Each week, students will be provided with extra practice problems that represent "test-like" material. Students will have the opportunity to work on and discuss these problems during the weekly studio sessions. Studio attendance will be determined, beginning on the second week of classes, by your participation in solving the practice problems. Your TA may ask you to write solutions on the board or turn in your solutions to one of the problems at the end of class as part of your participation grade.

EXAMS

In-class assessments consist of four tests, four quizzes, and a common final exam among all 1552 sections.

No books, notes, calculators, cell phones, or other electronic devices are allowed during the quizzes and tests. **Showing work is required on all written assessments. As writing mathematics properly is part of learning Calculus, points may be deducted for incorrect mathematical notation.**

QUIZZES: Four quizzes will be administered during the term. Quizzes are closed book, closed notes, and will be administered during the *first* 25 minutes of the studio period on the following Thursdays:
- Quiz 1: Thursday, January 23
- Quiz 2: Thursday, February 13
- Quiz 3: Thursday, March 5
- Quiz 4: Thursday, April 2

TESTS: We will have four tests during the term. Tests will be administered during the full 50 minutes of the lecture period. The testing dates are as follows:
- Test 1: Friday, January 31
- Test 2: Friday, February 21
- Test 3: Wednesday, March 11

- Test 4: Friday, April 10

FINAL EXAM: The final exam will cover all course materials and will be standardized by the department. *All students must take the final examination*. The common final exam will be administered on **Thursday, April 23**, from 6:00-8:50 pm.

Your final average will be computed as follows:

Assessment	Weight
Classwork Average	10%
Quizzes	10%
Best Three Tests (14% each)	42%
Lowest Test	8%
Common Final Exam	30%

Letter grades will be determined based on the following intervals. ***You are guaranteed a minimum of the following scale, but do not expect any deviation:***

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

Adjustments, if any, to the above scale will be standardized by the department, not the individual instructors.

Midterm grades will be assigned on **February 17**. A satisfactory grade will be assigned to all students with a midterm average of 70% or higher (based on the above weighting of grades).

Extra credit: Please note that homework and participation total 10% of the final average, so you can earn a significant portion of the grade just by coming to class and completing your homework. Additionally, if you complete all the homework, and attend all classes, the classwork average can exceed 100%, so extra points are already built into the course syllabus.
Each lecture class that completes the course instructor opinion survey (CIOS) with a response rate of 85% or higher before 6:00 pm on April 23 (prior to the administration of the final exam) will be given the option to drop the lowest quiz grade.
As this course is a coordinated class, your instructor will be unable to offer you any additional extra credit opportunities during the term.

Class Policies

Attendance: You are expected to come prepared and actively participate in every lecture and studio 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.
- 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://osi.gatech.edu/content/honor-code). 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 an unapproved calculator, books, or any form of notes on tests.
- Copying directly from **any** source, including friends, classmates, tutors, internet sources (including Wolfram Alpha), 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.

Regrading of Papers: If a problem on your quiz or test has been graded in error, you must submit a regrade request on Gradescope no more than *one week* after the quizzes or tests have been returned in class. A regrade request should only be submitted if you have done something CORRECT on your quiz or test that has been marked as incorrect. Problems submitted for regrades could be adjusted up or down, so please make sure to check the solutions before requesting a regrade.

Make-Ups: In an emergency situation, a make-up test or quiz may be allowed if your instructor is notified prior to the class period and provided with a reasonable, **written** confirmation of your absence. Any make-ups must be completed before the corresponding 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 your instructor with the official documentation in advance.

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

Announcements: *You are responsible for obtaining any announcements or materials placed on the course Canvas pages.* Please see the list of important websites on the first page of the syllabus.

Additional Help: *Asking questions is a key to success!* Please stop by your instructor's or TA's office hours whenever you have questions. Free help is also available Monday-Thursd **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 Office of Disability Services to discuss the appropriate procedures. More information is available on their website, http://disabilityservices.gatech.edu/. Please also make an appointment with your instructor to discuss your accommodation, if necessary.

ay afternoons in the Math Lab, located on the second floor of Clough Commons.

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: http://studentlife.gatech.edu/content/services; **404-894-6367**; Smithgall Student Services Building 2nd floor
  - You also may request assistance at https://gatech-advocate.symplicity.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): http://studentlife.gatech.edu/content/need-help
  - 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.

Please note: *items on the syllabus and course schedule are subject to change. Any changes to the syllabus and/or course schedule will be relayed to the students in class and through e-mail.*

Important Dates Throughout the Term

6 January – First Day of Classes
20 January – MLK Holiday (No Class)
23 January – Quiz #1
31 January – Test #1
13 February – Quiz #2
17 February – Progress Reports Due
21 February – Test #2
5 March – Quiz #3
11 March – Last day to withdraw with a grade of "W"
11 March – Test #3
16-20 March – Spring Break (No Class)
2 April – Quiz #4
10 April – Test #4
20-21 April – Final Instructional Days
23 April – Common Final Examination (all 1552 classes)

Math 1552 Instructor and TA Contact Information

Course Instructors:

Section	Instructor	Instructor Contact Information	Class Times and Location	Instructor Office Hours
A	Dr. Wade Bloomquist	wbloomquist3@gatech.edu Office: Skiles 012 Office hours in Clough 248	MWF 8:00-8:50 am, Boggs B9	Wed 9:30-10:30 am, Fri 9:30-10:30 am, and by appointment
B	Dr. Miriam Kuzbary	mkuzbary3@gatech.edu Office: Skiles 014 Office hours in Clough 248	MWF 8:00-8:50 am, Weber SST III room 2	Wed 1-2 pm, Fri 10-11 am, and by appointment
C, E	Dr. Rui Han	rui.han@math.gatech.edu Office: Skiles 226	MWF 9:05-9:55 and MWF 10:10-11:00 am, Molecular Sciences G011	Thurs 10 am-12 pm and by appointment
D	Ms. Klara Grodzinsky	klara.grodzinsky@math.gatech.edu Office: Skiles 232 Phone: 404-894-4397	MWF 10:10-11:00 am, DM Smith 105	Mon 11:45-12:45, Wed 11:30-12:30, Fri 8:30-9:30, and by appointment

Teaching Assistants:

	TA	*Email Address*	*Studio Times and Locations*	*Office Hours in Clough 280 (unless noted)*
A01/ A03	Tom Rodewald	tomrodewald@gatech.edu	TR 8:00-8:50, Skiles 170 TR 9:30-10:20, Skiles 170	Thursdays 11:30 am-12:30 pm
A02	Daniel Minahan	dminahan6@gatech.edu	TR 9:30-10:20, Skiles 156	Thursdays 12-1 pm
B01	Ian Katz	ikatz6@gatech.edu	TR 8:00-8:50, Skiles 156	Tuesdays 12-1 pm
B02/ B03	Kofi Amanfu	mamanfu3@gatech.edu	TR 8:00-8:50, Skiles 246 TR 9:30-10:20, Skiles 246	Thursdays 2:30-3:30 pm
C01/ C03	Tao Yu	tyu70@gatech.edu	TR 3:00-3:50, Skiles 169 TR 4:30-5:20, Skiles 169	Thursdays 1-2 pm
C02/ C04	Michail Sarantis	msarantis3@gatech.edu	TR 3:00-3:50, Skiles 171 TR 4:30-5:20, Skiles 171	Mondays, 4-5 pm
D01/ D03	Kewen Bu	kbu3@gatech.edu	TR 8:00-8:50, Skiles 169 TR 9:30-10:20, Skiles 169	Wednesdays, 4:30-5:30 pm
D02/ D04	Shaojun Ma	sma74@gatech.edu	TR 8:00-8:50, Skiles 171 TR 9:30-10:20, Skiles 171	Tuesdays 3:30-4:30 pm
D05	Cvetelina Hill	chill80@gatech.edu	TR 9:30-10:20, Skiles 256	Thursdays 3:30-4:30 pm
E01/ E03	Shasha Liu	sliao7@gatech.edu	TR 3:00-3:50, Skiles 256 TR 4:30-5:20, Skiles 256	Fridays 2:30-3:30 pm
E02/ E04	Guangyu Cui	gcui8@gatech.edu	TR 3:00-3:50, Skiles 170 TR 4:30-5:20, Skiles 170	Tuesdays 1-2 pm

Tentative Course Schedule

Please use this as an approximate class schedule; section coverage may change depending on the flow of the course. Review days/topics may be changed or cancelled in the event of inclement weather or campus closures.

Week	Mon	Tues	Wed	Thurs	Fri
1	Jan 6 Introduction Section 4.8: Review of Derivatives/Anti-derivatives	Jan 7 HW: Memorize the formulas in section 4.8!	Jan 8 Sections 5.1-5.2: Area under the curve	Jan 9 HW: Memorize the formulas in section 4.8! Try review problems on MyMathLab.	Jan 10 Section 5.3: The Definite Integral
2	Jan 13 Section 5.3, continued	Jan 14 HW 1due: sections 5.1-5.3	Jan 15 Section 5.4: The Fundamental Theorem of Calculus	Jan 16	Jan 17 Section 5.5: Integration by Substitution
3	Jan 20 **No class** MLK Holiday	Jan 21 HW 2 due: sections 5.4-5.5	Jan 22 Section 5.6: Area Between Curves	Jan 23 Quiz 1: sections 4.8, 5.1-5.5	Jan 24 Section 8.2: Integration by Parts
4	Jan 27 Section 8.2, continued	Jan 28 HW 3 due: sections 5.6, 8.2	Jan 29 Section 8.3: Integration of Products and Powers of Trig Functions	Jan 30 Review for Test 1	Jan 31 Test 1: Sections 4.8, 5.1-5.6, 8.2
5	Feb 3 Section 8.3, continued	Feb 4 HW 4 due: section 8.3	Feb 5 Section 8.4: Trigonometric Substitution	Feb 6	Feb 7 Section 8.4, continued
6	Feb 10 Section 8.5: Partial fractions	Feb 11 HW 5 due: section 8.4	Feb 12 Section 8.5, continued	Feb 13 Quiz 2: sections 8.3-8.4	Feb 14 Section 4.5: L'Hopital's rule
7	Feb 17 Section 8.8: Improper Integrals	Feb 18 HW 6 due: section 8.5	Feb 19 Section 8.8, continued	Feb 20 Review for Test 2	Feb 21 Test 2: Sections 8.3-8.5, 4.5
8	Feb 24 Section 10.1: Sequences	Feb 25 HW 7 due: sections 4.5, 8.8	Feb 26 Section 10.2: Infinite Series	Feb 27	Feb 28 Section 10.2, continued
9	Mar 2 Section 10.3: The Integral Test	Mar 3 HW 8 due: sections 10.1-10.2	Mar 4 Section 10.4: Comparison Tests	Mar 5 Quiz 3: sections 8.8, 10.1-10.2	Mar 6 Section 10.4, continued
10	Mar 9 Section 10.5: Ratio and Root tests	Mar 10 Review for Test 3 HW 9 due: sections 10.3- 10.4	Mar 11 Test 3: Sections 4.5, 8.8, 10.1-10.4	Mar 12	Mar 13 Section 10.6: Alternating Series
	Mar 16-March 20		Spring Break, No Class		

11	Mar 23 Section 10.6, continued	Mar 24 HW 10 due: sections 10.5-10.6	Mar 25 Section 10.7: Power series	Mar 26	Mar 27 Section 10.7, continued
12	Mar 30 Sections 10.8-10.9: Taylor polynomials and series	Mar 31 HW 11 due: section 10.7	Apr 1 Sections 10.8-10.9, continued	Apr 2 Quiz 4: sections 10.6-10.7	Apr 3 Sections 10.8-10.9, continued
13	Apr 6 Sections 10.8-10.9, continued	Apr 7 HW 12 due: sections 10.8-10.9	Apr 8 Review for Test 4	Apr 9 Review for Test 4	Apr 10 Test 4: Sections 10.5-10.9
14	Apr 13 Section 6.1: Volumes by disks	Apr 14 HW 13 due: section 6.1	Apr 15 Section 6.2: Volumes by Shells	Apr 16	Apr 17 Review for Final Exam
15	Apr 20 Review for Final Exam	Apr 21 Review for Final Exam	Apr 22 Reading Day Study Session TBA	Apr 23 Final Exam: 6:00-8:50 pm	Apr 24