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, and10.

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 the course id listed on your instructor's page. You can access MyMathLab at www.mymathlab.com.

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 recitations. 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, weekly quizzes* and *class participation*. There are 365 possible points on the chart below. The classwork average will be computed by taking the total number of points earned, and dividing by 3.5.

Quizzes (10 total)	20 points each, drop lowest	190 points
Homework (13 total)	10 points each, drop lowest	120 points
Recitation (13 total weeks)	2 points each week	26 points
Lecture (13 total weeks)	3 points each week	39 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 recitation, you should attempt the problems **before** the weekly recitation 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 quizzes and 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 16*.

PARTICIPATION: Class participation will be based on your attendance in the lectures and recitation sessions. Please see your instructor's page for details on how this grade will be calculated.

RECITATIONS: Recitations 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. Instead, you will spend the recitation time working on practice problems. Your TA will measure participation through attendance and effort during the recitation sessions.

QUIZZES: Short weekly quizzes will be given in recitation on Thursdays on non-test weeks. Quizzes will be given during the *first* 15 minutes of recitation, and will be based on the homework assignment due each week. All quizzes are closed book, closed notes, and no calculators are allowed.

EXAMS

In-class exams consist of three midterms, and a common final exam among all 1552 sections.

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

MIDTERM EXAMS: We will have three midterm exams during the term. Tests will be administered during the full 50 minutes of the lecture period on Fridays. The testing dates are as follows:

- Midterm 1: February 8
- Midterm 2: March 8
- Midterm 3: April 12

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 25**, from 6:00-8:50 pm.

Your final average will be computed as follows:

Assessment	Weight
Classwork Average	30%
Best Two Midterms (15% each)	30%
Lowest Midterm	10%
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 18**. 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 185 of the 375 possible classwork points, allowing you to earn up to 107% for the classwork grade. As classwork counts for 30% of the overall class grade, that means *you have the opportunity to add up to 2% to your final average just for attending class and completing your homework, which will affect all borderline grades*. 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 recitation 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 test has been graded in error, you must submit a regrade request to your instructor (not your TA!) **in writing,** along with your paper, no more than *one week* after the tests 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.

Make-Ups: In an emergency situation, a make-up test or quiz may be allowed if your instructor is notified prior to the exam 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.

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.

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 your instructor's web pages.* Please see your instructor page for a list of important websites.

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-Thursday 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

7 January – First Day of Classes
21 January – MLK Holiday (No Class)
8 February – Midterm #1
18 February – Progress Reports Due
8 March – Midterm #2
13 March – Last day to withdraw with a grade of "W"
18-22 March – Spring Break (No Class)
12 April – Midterm #3
22-23 April – Final Instructional Days
25 April – Common Final Examination (all 1552 classes)

Instructor Page for Math 1552 J1-J3

Instructor: Sal Barone
Office: Skiles 013
Office Hours: Mondays and Wednesdays, 12:30-1:45 pm; and by appointment
E-mail: sbarone@math.gatech.edu

Course Websites

Instructor's Web Page: http://people.math.gatech.edu/~sbarone7
Course Information: http://canvas.gatech.edu (*required*)
Textbook/Homework Access: http://www.mymathlab.com (*required*)
On-line Discussions: www.piazza.com (*highly recommended*)

Course Meeting Times: Lecture meets Mondays, Wednesdays, and Fridays from 1:55-2:45 am in Boggs B9. Recitation sections J1 and J2 meet on Tuesdays and Thursdays from 4:30-5:20 pm and sections J3 and J4 meet on Tuesdays and Thursdays from 6:00-6:50 pm (see locations below).

Teaching Assistants, Office Hours, and Meeting Locations:

	TA	*Email Address*	*Recitation Location*	*Office Hours*
J1/J3	David Harper	dharper40@gatech.edu	Skiles 256	Wed 4:30-5:30 in Math Lab Clough 280
J2/J4	Victor Bailey	vbailey7@gatech.edu	Skiles 257	Thu 3:00-4:00 in Math Lab Clough 280

Please note: Ms. Grodzinsky will be out of the office on January 16. On this date, arrangements will be made to cover the class lecture and you will still be responsible for the material covered during class.

MyMathLab Course ID: Our MML course is linked to Canvas this spring. 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.

Class participation grade: Lecture participation will be a weekly submission through Canvas of ONE PAGE of handwritten notes which are (1) neatly organized and (2) use proper notation and display correct usage of mathematical concepts. This page can come from any source but must be handwritten solutions of problems: MyLab problems written out nicely, worksheet problems, book problems, or problems from the lectures. Recitation participation will be attendance but check with your TA in the second week of class to see how it will be implemented.

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.

Mon	*Tues*	*Wed*	*Thurs*	*Fri*
Jan 7 Introduction Section 4.8: Review of Derivatives/Anti-derivatives	Jan 8 HW: Memorize the formulas in section 4.8!	Jan 9 Section 5.1: Area under the curve	Jan 10 HW: Memorize the formulas in section 4.8! Try review problems on MyMathLab.	Jan 11 Section 5.2: Area under the curve
Jan 14 Section 5.3: The Definite Integral	Jan 15 HW 1due: sections 5.1-5.2	Jan 16 Section 5.3, continued	Jan 17 Quiz 1: sections 4.8, 5.1-5.2	Jan 18 Section 5.4: The Fundamental Theorem of Calculus
Jan 21 **No class** MLK Holiday	Jan 22 HW 2 due: sections 5.3-5.4	Jan 23 Section 5.5, 7.1: Integration by Substitution	Jan 24 Quiz 2: sections 5.3-5.4	Jan 25 Section 5.6: Area Between Curves
Jan 28 Section 8.2: Integration by Parts	Jan 29 HW 3 due: sections 5.5-5.6	Jan 30 Section 8.2, continued	Jan 31 Quiz 3: sections 5.5-5.6	Feb 1 Section 8.3: Integration of Products and Powers of Trig Functions
Feb 4 Section 8.4: Trigonometric Substitution	Feb 5 HW 4 due: sections 8.2-8.3	Feb 6 Section 8.4, continued Review for midterm 1	Feb 7 Review for midterm 1	Feb 8 Midterm 1: Sections 4.8, 5.1-5.6, 8.2-8.3
Feb 11 Section 8.5: Partial fractions	Feb 12 HW 5 due: section 8.4	Feb 13 Section 8.5, continued	Feb 14 Quiz 4: section 8.4	Feb 15 Section 4.5: L'Hopital's rule
Feb 18 Section 8.8: Improper Integrals	Feb 19 HW 6 due: sections 8.5, 4.5	Feb 20 Section 8.8, continued	Feb 21 Quiz 5: sections 8.5, 4.5	Feb 22 Section 10.1: Sequences
Feb 25 Section 10.2: Infinite Series	Feb 26 HW 7 due: sections 8.8, 10.1	Feb 27 Section 10.2, continued	Feb 28 Quiz 6: sections 8.8, 10.1	Mar 1 Section 10.3: The Integral Test
Mar 4 Section 10.4: Comparison Tests	Mar 5 HW 8 due: sections 10.2, 10.3	Mar 6 Section 10.4, continued Review for Midterm 2	Mar 7 Review for midterm 2	Mar 8 Midterm 2: Sections 8.4-8.5, 4.5, 8.8, 10.1-10.3
Mar 11 Section 10.5: Ratio and Root tests	Mar 12 HW 9 due: section 10.4	Mar 13 Section 10.6: Alternating Series	Mar 14 Quiz 7: Section 10.4	Mar 15 Section 10.6, continued
Mar 18-March 22 Spring Break, No Class				
Mar 25 Section 10.7: Power series	Mar 26 HW 10 due: sections 10.5-10.6	Mar 27 Section 10.7, continued	Mar 28 Quiz 8: sections 10.5-10.6	Mar 29 Sections 10.8-10.9: Taylor series

Apr 1 Sections 10.8-10.9, continued	Apr 2 HW 11 due: section 10.7	Apr 3 Sections 10.8-10.9, continued	Apr 4 Quiz 9: section 10.7	Apr 5 Sections 10.8-10.9, continued
Apr 8 Section 6.1: Volumes by disks	Apr 9 HW 12 due: sections 10.8-10.9	Apr 10 Review for Midterm 3	Apr 11 Review for midterm 3	Apr 12 Midterm 3: Sections 10.4-10.9
Apr 15 Section 6.2: Volumes by Shells	Apr 16 HW 13 due: section 6.1	Apr 17 7.2: Separable Differential Equations	Apr 18 Quiz 10: section 6.1	Apr 19 Section 7.2, continued
Apr 22 Review for Final Exam	Apr 23 Review for Final Exam	Apr 24 Reading Day Study Session TBA	Apr 25 Final Exam: 6:00-8:50 pm	Apr 26