Syllabus
Math 141: Calculus I
Section T01 Spring 2023

Instructor: Jack Dalton
Office: LeConte 121
Office Hours: (Tentatively) T 1-2:30 PM, R 4:30-6:00 PM or by appointment
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SI Leader: Edith Gonzalez-Mora
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SI Session Attendance Policy: You must attend one SI session per week for at least 9 weeks of the semester. You will lose one percentage point off your final grade for each week less than 9 that you attend an SI Session. If you do not attend any, you will lose almost a full letter grade.

Meeting times:	Lectures:	Tu, Th 2:50 PM-4:05 PM, LeConte 123
	Recitations:	Mon 2:20pm-3:10pm, LC 123
	Labs:	Wed 2:20pm-3:10pm, LC 123

Textbook and Materials: *Thomas' Calculus: Early Transcendentals, 15th Edition, ISBN 13: 8220126988071.* This can be either a physical copy or the ebook version found in our homework system, MyMathLab. All students need an access code for MyMathLab for their homework. In addition, students need access to a computer, a method to create pdf's, and may find a calculator helpful at times (A graphing calculator is good but optional here. You should avoid a calculator with a computer algebra system).
Prerequisite: C or better in MATH 112, 115, 116, or by Precalculus Placement Test: http://assess.math.sc.edu/.
Bulletin Description: Functions, limits, derivatives, introduction to integrals, the Fundamental Theorem of Calculus, applications of derivatives and integrals.

A student who successfully completes Calculus I (Math 141) should continue to: Develop as an independent learner with the ability to approach problems from a conceptual point of view; Utilize more than one idea in a single problem, and to apply appropriate calculus skills to problems in context; Master concepts and gain skills needed to solve problems related to techniques of limits, differentiation, applications of differentiation, integration, and applications of integration.

STUDENTS' LEARNING OBJECTIVES:

1. Limits
   (a) Explain analytically and geometrically the existence and non-existence of limits.
   (b) Faithfully execute the algebraic rules and the substitution rule for computations of limits.
   (c) Set up and implement the squeeze theorem to compute limits.
   (d) Recognize continuous functions and explain failures of continuity geometrically and analytically.
2. Differentiation
   (a) Estimate and evaluate derivatives of functions using the definition of the derivative as the limit of the difference quotients.

(b) Explain the geometric meaning of the existence and the non-existence of the derivative.

(c) Sketch qualitative graphs of functions using information from their first and second derivatives and conversely extract information on the first and second derivatives from graphs of functions.

(d) Faithfully compute derivatives explicitly for algebraic and compositional combinations of polynomials, exponentials, trigonometric functions and their inverses and implicitly using the chain rule.

3. Applications of differentiation
   (a) Determine the extreme values of differentiable functions on closed intervals.
   (b) Setup and solve applied optimization problems.
   (c) Setup and solve related rates problems.
   (d) Understand and faithfully utilize L'Hôpital's Rule to compute limits of appropriate type.
4. Integration
   (a) Explain and estimate definite integrals using Riemmann sums.
   (b) Explain the Fundamental Theorem of Calculus.
   (c) Utilize the Fundamental Theorem of Calculus to compute definite integrals involving basic anti-derivatives.
   (d) Apply u-substitution to solve definite and indefinite integrals.
5. Applications of integration
   (a) Compute areas between curves as definite integrals.
   (b) Compute volumes of solids of revolution using the methods of washers and shells as definite integrals.

INSTRUCTORS' GUIDING PRINCIPLES FOR STUDENT DEVELOPMENT:

1. Develop analytical and deductive reasoning through mathematical structure and argument.
2. Impart fluency with representations of data and information.
3. Cultivate faithful implementation and execution of mathematical computations.
4. Connect mathematics to the broader understanding of our existence.
5. Foster communication and integration into the university community.

Expectations: Students are expected to read assigned sections in the text and complete periodic homework assignments and quizzes. Students should check email and Blackboard frequently for announcements and posted course documents such as solutions and worksheets.

Grade Distribution:

Homework	14%
Quizzes	10%
Tests (3 In-Class)	36%
Final Exam	20%
Lab Projects	10%
Gateways	10%

Grading Scale:

A	90%-100%	C	70%-76%
B+	87%-89%	D+	67%-69%
B	80%-86%	D	60%-66%
C+	77%-79%	F	below 60%

Attendance Policy: Attendance policies will follow university guidelines. Attendance will be taken each class and a seating chart may be enforced in order to facilitate university contact tracing. Please take precautions to minimize the risk of spreading ANY contagious diseases: If you feel sick and want to come to class, please wear a mask. In addition to this, students that miss class should be proactive in contacting your instructor with supporting documentation and setting up make-up options for missed work in a timely manner, typically within 24 hours. For example, do not wait until the next time you come to class. Students are ultimately responsible for catching up with any missed material or announcements.

Testing Policy: There will be three writen exams during the semester. Exact material for each exam will be announced in class before the exam date. A make-up test will only be given in an extreme situation and will require written documentation. No exams will be dropped, but exam correction points are available. If students come to office hours and present on a whiteboard solutions to questions they got wrong, they will earn back half the lost points. If a student cannot figure out a question they got wrong on their own, that is fine, as long as it is clear to the instructor that they attempted the problem before the meeting. A student can earn points back in this way for only one assignment per office hour.

Homework Policy: Homework assignments will be given throughout the semester through MyMathLab (mymathlab.com). Additional instructions for getting set up in MyMathLab are posted on Blackboard. It is highly recommended to have assignments completed before the due date to leave time to resolve any questions that may occur. Students may discuss homework assignments with each other, but it is the responsibility of the individual student to learn and understand the course material. **Homework presentations** will occur most class periods and each scholar is expected to present **three** times before the end of the semester. I will ask for volunteers at the end of each class period to present a homework problem of their choice from the section we covered that day. At the beginning of the following class, the presenter will write both a question and solution on the white board and explain their work to the class. Each presentation should be less than 5 minutes.

Quiz Policy: Short written quizzes will be given periodically. These are designed to help students receive feedback on their notation and on their work justifying their final answers. Appropriate written documentation must be provided to make up any missed quiz. Quiz correction points are available, but the same rules listed above under Testing Policy apply.

Getting Help: Students are encouraged to attend office hours or schedule appointments if particular difficulties arise. In this course, the subject matter builds upon itself, so it is important to catch gaps in understanding early. Students should also be aware of the Math Tutoring Center (www.math.sc.edu/math-tutoring-center) and of the Student Success Center satellite locations in residence halls and online (http://sc.edu/success). Help is also available through supplemental instruction. The full schedule for SI sessions is available online. Even if you cannot make your SI leader's sessions, you can attend sessions for other SI leaders.

Disability Services: Any student with a documented disability should contact the Office of Student Disability Services at 803-777-6142 to make arrangements for appropriate accommodations. Please let me know anything that I need to know to be able to properly make accommodations.

Honor Code: The Honor Code applies to all work for this course. Students should review the Honor Code at http://www.sc.edu/academicintegrity. Students found violating the Honor Code will be subject to discipline.

Technology Policy: Unless specifically requested by the instructor, cell phones are to be away (not in view), and with sound turned off during class. Cell phones are not just a distraction to the person using them, but also to those around them. If you need to use your cell phone in an emergency, please do so in the hallway.

Cumulative Final Exam: Tuesday, May 2 at 4:00 PM in LeConte 123

Important Dates:

Jan	9	First Day of Classes
Jan	16	MLK Day (No Classes)
Jan	17	Last Day to Add/Drop without grade of W
Jan	31	Exam I on All Sections Covered in Class from 1.1 Thru 3.2
Mar	5-12	Spring Break (No Classes)
Mar	16	Exam II on All Sections Covered in Class from 3.3 Thru 4.5
Mar	27	Last day to withdraw without a grade of 'WF' being recorded
Apr	13	Exam III on All Sections Covered in Class from 4.6 Thru 6.1
Apr	24	Last Day of Classes
May	2	Final Exam (cumulative) at 4:00 PM in LeConte 123

Weekly Schedule:
The following is a *tentative* weekly schedule of topics and subject to change based on our needs.

Week	Sections	Topics
1	1.1, 1.2, 1.3, 1.5, 1.6	Functions, Composition, Trig, Exp, & Inverse Functions
2	2.1, 2.2, 2.3, 2.4	Rates of Change, Tangents, Limits, Lim Laws, 1-Sided Lims
3	2.5, 2.6, 3.1, 3.2	Continuity, Limits w ∞, Derivative at Pt, Deriv Func.
4	Exam I, 3.3	Exam I Covers 1.1 thru 3.2, Derivative Rules (on Exam II)
5	3.5, 3.6	Derivatives of Trig Functions, The Chain Rule
6	3.7, 3.8, 3.9	Implicit Differentiation, Derivatives of Inverse Functions
7	3.10, 4.1, 4.2	Related Rates, Extreme Values, Mean Value Theorem
8	4.3, 4.4	First Derivative Test, Concavity & Curve Sketching
	Spring Break	No Classes
9	4.5, Exam II	Indeterminate Forms & L'Hopital's Rule, Exam II on 3.3-4.5
10	4.6, 4.8	Optimization, Antirderivatives
11	5.1, 5.2, 5.3	Area, Estimating w/ Fin. Sums, Riemann Sums, Def Integral
12	5.4, 5.5, 5.6	Fundamental Theorem of Calculus, Indefinite Integration, U-Substitution, Definite Integral Substitution, Area Between Curves
13	6.1, Exam III	Disc/Washer Method, Exam III Covers 4.6-6.1
14	6.2, Review	Shell Method

Gateway/Lab Schedule:
The following is a *tentative* weekly schedule of topics and subject to change based on our needs.

Week	Date	Webwork	Lab #
1	Jan 11	Orientation & Readiness	
2	Jan 17	Practice Gateway 1	1
3	Jan 25	Gateway 1-1	
4	Feb 1	Gateway 1-2	
5	Feb 8	Gateway 1-3	2
6	Feb 15		3
7	Feb 22		4
8	Mar 1	Practice Gateway 2	5
	Spring Break	No Classes	
9	Mar 15	Gateway 2-1	
10	Mar 22	Gateway 2-2	
11	Mar 29	Gateway 2-3	6
12	Apr 5		7
13	Apr 12		8
14	Apr 19		9

Strategies for Success in This Course

For many, math can be a stressful subject to learn. Here are some tips and strategies that may make things a bit easier for you.

- Getting the correct final answer is important, but it is not enough just to have this. You must also justify why your answer is correct through your work.
- Help me understand what you understand. If you get stuck on a problem, writing out what you would do if you could get unstuck is often worth partial credit. It is perfectly fine for your math work to have actual sentences in it.
- Learning is a marathon, not a sprint. Try to work with our material a short time every day instead of waiting until a deadline is looming. The additional stress of a deadline will make things harder than they have to be. A good rule of thumb is to spend about two hours outside of class working with our material for every hour you spend in class.
- Homework is meant to give you a chance to stretch your abilities and make sure you are comfortable with our topics. This way, you can take the information we cover in class and apply it to problems you may not have seen before exactly. Don't rob yourself of this opportunity by letting a computer do your work instead.
- Studying for math exams may be different than the strategies you would use for other classes. Staring at the same problems over and over is usually only helpful to a certain point. Instead, you might try teaching others how to do problems. This way you can practice problems, explain why you do individual steps, and be able to answer questions on the fly from your audience. I recommend cycling between working on your own and taking turns teaching other students in our class how to do problems.
- Proper notation, e.g. equal signs or parentheses, is important. Be sure that you communicate exactly what you mean to communicate. Remember, I only get to see what you put on the paper; I can't see what you are thinking in the moment.

- Class attendance is essential. With the way that material builds upon itself, playing catch-up in a math class is much harder than learning with the class in the first place. In my experience, students that miss more than two or three classes tend to finish the class with about a letter grade lower than they probably could have achieved if they attended class. You should try to have as few absences as possible.