

# MATH 1011 SECTION 011: CALCULUS I

Fall 2023

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<b>Instructor:</b>	Samuel DeHority	<b>Time:</b>	Tu-Th 6:10pm – 7:25pm
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<b>TA:</b>	TBD	<b>TA Email:</b>	<a href="#">TBD</a>

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## Course Pages

- <https://math.columbia.edu/~samdehority/teaching/2023-Fall-CalcI>

**Office Hours:** Monday and Wednesday 1pm-2pm

## Textbook:

- J. Stewart, *Calculus: Early Transcendentals*. 9th edition. (WebAssign not required)

**Prerequisites:** There are no formal prerequisites for this course.

**Grading Policy:** The final grade for the course will be based on the final exam (35%) the two midterms (20% each) the homework assignments (20%) and participation/in-class quizzes(5%) unless a low quiz score would hurt the final grade in which case the other factors are scaled proportionally.

## Course Policies:

- On a typical week there will be one homework assignment due. This is to be submitted online via courseworks on Tuesday by 11:59pm.
- On most weeks there will also be a short, collaborative quiz during lecture. The cumulative score of these can only help (and cannot hurt) your final grade.
- Homework submissions are expected to be **complete documents** and demonstrate organization and coherence appropriate for a University-level course. At a minimum, they should restate the problem statement and clearly separate scratch work from the solution. You are encouraged, but by no means required, to submit solutions typeset using L<sup>A</sup>T<sub>E</sub>X.
- Students are strongly encouraged to work together on the homework assignments, but resulting submissions must be authored and written up individually. Please also note collaborators on the document.
- The lowest homework grade will be dropped.
- There will be no makeup exams and late homework will not be accepted without documentation from a doctor, dean or university official.
- There is no collaboration on the midterm or final exams.

**Exam Dates:** There will be two midterm exams and a final exam.

- The **midterms** will be in class on **October 3** and on **November 14**.
- The **final exam** will take place during the final exam period Dec. 15-22.

**Course Schedule:** The course will mostly cover the topics in the first 6 chapters of the Stewart text although in a slightly modified presentation. Here is an approximate schedule for the course, which lists key topics covered in the course.

Date	Topic	Textbook sections
Sep 5	Functions. Linear functions and trig functions	1.1 - 1.2
Sep 7	Transforming functions. Exponential, log, inverse function	1.3 - 1.5
Sep 12	Derivative: motivation. Informal definition of limit	2.1, 2.2
Sep 14	Limit laws. Squeeze theorem	2.3
Sep 19	Continuity, asymptotes	2.5, 2.6
Sep 21	Formal definition of derivative.	2.7, 2.8
Sep 26	Power rule. Product rule. Quotient rule.	3.1,3.2
Sep 28	Midterm review	
<b>Oct 3</b>	<b>Midterm 1</b>	
Oct 5	Trig function derivatives	3.3
Oct 10	Chain rule. Implicit differentiation	3.4, 3.5
Oct 12	Derivative of log.	3.6-3.8
Oct 17	Related rates, linear approximation	3.9, 3.10
Oct 19	Maximization. Mean value theorem	4.1, 4.2
Oct 24	Second derivative. L'Hospital's rule	4.3, 4.4
Oct 26	Graph sketching	4.4-4.5
Oct 31	Optimization	4.7
Nov 2	Antiderivatives	4.9
Nov 7	<b>Holiday</b>	
Nov 9	Newton's method, midterm review	4.8
<b>Nov 14</b>	<b>Midterm 2</b>	
Nov 16	The area problem	5.1
Nov 21	Definite integral	5.2
Nov 23	<b>Holiday</b>	
Nov 28	Fundamental theorem of calculus	5.3-5.4
Nov 30	Substitution	5.5
Dec 5	Applications of integral	§6
Dec 7	Final review	

**Academic Honesty:** Students are expected to abide by the highest standards of academic integrity, only submit work of which they are the author, and not participate in plagiarism or cheating of any kind. Please see the university website for more detailed policies.