

# Math 135: Calc I

**Course name:** Math 135 - Calculus I (Section 1)

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**Meetings:** MWF 9:20-10:20 in Valentine 103

**Office hours:** Monday and Wednesday 10:30-11:30, Tuesday 1:30-2:30, and by appointment. If you can't make it to scheduled office hours, please email me.

**Textbook:** *Calculus: Single Variable* by Hughes-Hallett et al., 7th ed.

**Course contents:** This course is an introduction to the derivative, which is the first concept of calculus. The course will be divided up into four parts, roughly delineated by the midterms: review of precalculus and functions, the concept of the derivative, computing the derivative, and applying the derivative. Each of these parts builds on the previous, so it is important that you keep up.

**Homework:** There are written assignments due every Friday and online assignments assigned through WileyPlus on an ad hoc basis.

**Quizzes:** There will be quizzes each Friday at the end of class. These are not meant to be difficult and will mostly consist of near-duplicates of HW problems.

**Exams:** Three midterms and a final. The midterms are on the weekly schedule on the next page. Please let me know if this schedule conflicts with any of your other commitments. Generally I will allow makeups for university-sanctioned activities and for medical/family emergencies, but not in any other case.

**Grading:** There are 700 pts you can earn in this course. The total semester HW grade is worth 50 points, the midterms are worth 100 pts each, the final is worth 150 points, and each quiz is worth 30 points. There *may* be opportunities for extra credit/bonus points throughout the term. (Don't count on it.)

**Grading scale:** Here is the conversion between percentage and four-point scale.

94-100	4.0	73-75	2.25
91-93	3.75	70-72	2.0
88-90	3.5	68-69	1.75
85-87	3.25	65-67	1.5
82-84	3.0	63-64	1.25
79-81	2.75	60-62	1.0
76-78	2.5	0-59	0

**Weekly schedule:** The following schedule is *tentative*.

Class	Section	Topics
W 8/30	1.1	Intro, functions
F 9/1	1.1	More functions. Linear functions
M 9/4	1.2	Exponential functions
W 9/6	1.2	Finish exponential. Logarithms. Exponential growth.
F 9/8	1.4	More exponential growth and decay
M 9/11	1.6	Proportional, power functions
W 9/13	1.6	More power functions. Polynomials. Rational functions.
F 9/15	1.6, 1.3	Rational functions. New functions from old.
M 9/18	1.3	Combining functions
W 9/20	1.5	Trig functions
F 9/22	–	EXAM 1
M 9/25	2.1, 2.2	Average rates of change. Derivative
W 9/27	2.2, 2.3	More derivative. The derivative as a function.
F 9/27	2.3	The derivative function.
M 10/2	2.4	More on derivatives.
W 10/4	2.5	Second derivative.
F 10/6	–	Definition of the derivative
M 10/9	3.1	Derivative of power functions, polynomials
W 10/11	3.4, 3.2, 3.5, 3.6	Derivative rules. Chain rule
F 10/13	–	Happy midsemester break!
M 10/16	3.3, 3.5, 3.6	More chain rule. Product rule
W 10/18	3.3	Quotient rule. Implicit differentiation
F 10/20	3.7	Implicit differentiation
M 10/23	2.6	Continuity and differentiability
W 10/25	–	Review
F 10/27	–	EXAM 2
M 10/30	4.1	Critical points
W 11/1	4.1	Inflection points, min/max
F 11/3	4.1	Min/max
M 11/6	4.4	Families of curves
W 11/8	4.4, 4.3	More curves. Optimization
F 11/10	4.3	Optimization
M 11/13	4.3	Optimization
W 11/15	4.6	Related rates
F 11/17	4.6	Related rates (Happy Thanksgiving Break)
M 11/27	4.8	Parametric curves
W 11/29	–	Review
F 12/1	–	EXAM 3
M 12/4	4.7	Limits
W 12/5	4.7	L'Hospital's rule.
F 12/7	–	Review

**FINAL EXAM:** Tuesday, Dec. 19, 8:30-11:30 AM.

**How to succeed:** The pace of this course is not meant to be punishing but, as a university course, this will probably be more difficult than your previous mathematics courses. As such you must attend all lectures, submit all HW, keep a consistent study schedule, and make use of all resources at your disposal. Those include: asking questions during lecture, coming to my office hours, going to the QRC, forming study groups, and if need be inquiring about private lessons/tutoring. I am more than happy to help you navigate the various resources at your disposal. However it is ultimately your responsibility to figure out how to succeed in this course.

**Calculators:** you will need a calculator in the TI-83 or TI-84 range, or other brand equivalent. You cannot use a TI-89 or equivalent, or anything more powerful than a TI-89.

**Accessibility:** Please inform me of any additional accommodation you require for this course. The Disability and Accessibility Services center in 33 Whitman Annex are the people to talk to *first*; after you have spoken with them, please inform me of the specific plan that I need to help you implement in order for you to succeed. I'm more than happy to comply with whatever plan you make, but I need advance notice, especially before exams. If you come to me a couple minutes before the exam and announce that you require special accommodations, I may not be able to help on such short notice.

**Academic honesty policy:** Click on the link to the pdf at <http://stlawu.edu/academic-affairs/resource/academic-honor-policy> In this course you are encouraged to collaborate on HW, but don't copy your the work of your friends, and never cheat on quizzes or exams. When in doubt, please email me and I'll be very happy to clarify things for you.

**Finally:** Have fun! Calculus is a very elegant and useful subject, one that people actually use in real-world applications and one which solves important problems. For example, one of the basic algorithms used in machine learning (stochastic gradient descent) turns on taking derivatives of a function at many random points. This forms the basic strategy for attacking many problems in big data. If you want to go further in mathematics or physical science, understanding the derivative is a good first step.