Course Information

Instructor:

Name:	Jake Wildstrom
E-mail address:	djwild01@louisville.edu
Phone number:	(502)852-5845 (x5845)
Office:	Natural Sciences Building 113
Office hours:	*Primary:* M11:00–12:30, W14:00–15:30
	Secondary: T11:00-13:00, R14:30–15:30, and by appointment

Course Websites:
> https://blackboard.louisville.edu/webapps/blackboard/content/listContent.jsp?course_id=_1359771_
> 1&content_id=_7629367_1
> http://aleph.math.louisville.edu/teaching/2015SP-205

Lecture: MWF 12:30–13:45 in Natural Sciences Building 110

Prerequisites: MATH 111-112, MATH/ENGR 190 or an appropriate score on a placement exam.

Special notes: Credit may not be received for both MATH 205 and either MATH 180 or ENGR 101.

Textbook: *Calculus, Early Transcendentals* by James Stewart, seventh edition.

Learning Outcomes: Students who complete this course will be expected to describe the concept of the limit of a function and calculate limits both graphically and analytically; recognize the definition of the derivative and identify the relationship between derivatives and graphs of functions; describe the definition of the definite integral as a limit of Riemann sums and interpret the definition as an area; demonstrate understanding of the relationship between the definite integral and antiderivatives via the fundamental theorem of calculus; master the standard formulas for computing derivatives and antiderivatives.

General Education Content: MATH 205 is a general education course and may not be taken pass/fail. This course satisfies the university general education requirement in the mathematics content area. Students who satisfy this requirement will demonstrate that they are able to do all of the following: represent mathematical informaiton symbolically, visually, and numerically; use arithmetic and geometric models to solve problems; interpet mathematical models such as formulas, graphs, and tables; estimate and check answers to mathematical problems, determining reasonableness and correctness of solutions.

Responsibilities: You are responsible for attending class on a regular basis and maintaining comprehension of the scheduled class objectives. You are expected to be participants in class, attend assessments, and to revise returned assessments when appropriate. Assignments are provided for your benefit and you are expected to work on them as necessary.

Special needs: Any scheduled absence during a quiz or examination, or any other special needs, *must* be brought to my attention during the first week of class. Unscheduled absences will be handled on a case-by-case basis, with exceptions generally made only for documented emergencies.

Calculators: Calculators are unnecessary for any in-class work, and may not be used on quizzes or examinations. They are also unnecessary for most homework problems, but may be used at your discretion. For any calculation more complicated than simple arithmetic, you are expected to show your work.

Honesty: There are many resources available to help you succeed in this class, including consultation during office hours and cooperation with other students. It is important, however, that all papers handed in be the result of your individual comprehension of the course material. Duplication of others' work is both a disservice to your own education and a serious violation of the university's academic honesty policy.

Grades: Homework is ungraded and is provided for study purposes. Quizzes will be based on the homework problems, and will account for 30% of your grade. The three midterm examinations will each be worth 15%, and the comprehensive final examination is worth 25%. A 90% overall guarantees a grade of A–, 80% guarantees a B–, and 70% guarantees a C–. All in-class assessments except for the final exam may be revised to recover up to a quarter of the lost credit (see next page of syllabus for details).

Changes: The syllabus is subject to change. Changes will be announced in class and updated online.

Revision Instructions

Assessments (exams and quizzes) except for the final exam can be revised for up to one-quarter credit. These revisions must be completed and turned in *prior to the next assessment date* for credit, unless otherwise stated in class. Papers will ordinarily be returned on the next class day after the quiz or exam. Unclaimed papers can be picked up during office hours. The first appearance of each incorrect element of the work will be circled; if you have questions or wish to have a discussion to clarify your own understanding, please come to office hours.

Revisions should consist of the original assessment, unaltered, with an attached document including, for each question, both an analysis of what was done incorrectly and the correct solution from the last correct point in the original solution. Revisions should be legible and easy to follow; explanations/analysis of errors should be in complete sentences. **No credit will be given for revisions which do not include discussion of the original solution.** Below are several examples of common types of errors and how an explanation for each might proceed.

Sign errors or arithmetic errors: These are easily explained, and are usually a matter simply of stating the error, e.g.

- "$4 + 7$ was calculated to be 13, when it is actually 11."

- "I thought the derivative of the cosine function was the sine function, but it's actually the opposite of the sine function."

Unjustifiable manipulations: The specific false "law" being applied should be given, as well as, if possible, a better law to use to achieve your goal, as below:

- "It isn't true that $(a + b)^2 = a^2 + b^2$. A good way to multiply out $(a + b)^2$ is as $a^2 + 2ab + b^2$."

- "In general the derivative of a product isn't the product of the individual derivatives. You have to use the product rule instead."

- "It's not true that $\sqrt{x + y} = \sqrt{x} + \sqrt{y}$, and there's no easy way to simplify this expression."

Misinterpreting word problems: When a mistake is made converting a description to mathematical language, indicate both your misconception and the correct intepretation:

- "I interpreted a 13% reduction in radiation as a multiplication by -13. However, if 13% of the radiation fades in a year, that actually corresponds to a multiplication by $100\% - 13\% = 0.87$."

- "The problem asked for us to maximize the area of a rectangle of dimensions $x \times y$; I maximized $2x + 2y$, which is ithe perimeter, instead of the area xy."

Not knowing what to do: Analyze the situation you got stuck at, and indicate both the next course of action and why it is chosen.

- "$\frac{d}{dx} \sin(x^2)$ is the derivative of a composition of the two simpler functions $\sin u$ and x^2, so we can find it with the chain rule."

- "Since this is a related rates problem with a right triangle, the distances in the problem will be related by the Pythagorean theorem."

These details are *not necessary* when you take the assessment originally, but are expected as part of the learning process when submitting revisions; the goal is not to harp on your errors but to provide you with the tools to understand and overcome them. Understanding the specfic mistakes is a key part of that process, which is why such a specific correction process is mandated.

Course Schedule

This schedule is tentative and subject to change.

Week	Monday	Wednesday	Friday
1		January 7th Precalc review	January 9th Precalc review and Section 2.1
2	January 12th Section 2.2	January 14th Section 2.3	January 16th Section 2.3 Quiz #1
3	January 19th MLK, Jr. day	January 21st Section 2.4	January 23rd Section 2.5
4	January 26th Section 2.6	January 28th Section 2.7	January 30th Section 2.8 Quiz #2
5	February 2nd Section 3.1	February 4th Section 3.2	February 6th Exam #1
6	February 9th Section 3.3	February 11th Section 3.4	February 13th Section 3.4 Quiz #3
7	February 16th Section 3.5	February 18th Section 3.5	February 20th Section 3.6 Quiz #4
8	February 23rd Section 3.9	February 25th Section 3.9	February 27th Section 3.10 Quiz #5
9	March 2nd Section 4.1	March 4th Section 4.2/4.3	March 6th Exam #2
10	March 9th Withdrawl date Section 4.3	March 11th Section 4.4	March 13th Section 4.4 Quiz #6
11	March 16th–20th Spring break		
12	March 23rd Section 4.5	March 25th Section 4.7	March 27th Section 4.7 Quiz #7
13	March 30th Section 4.8	April 1st Section 4.9	April 3rd Section 5.1 Quiz #8
14	April 6th Section 5.2	April 8th Section 5.3	April 10th Section 5.3 Quiz #9
15	April 13th Section 5.4	April 15th Section 5.4	April 17th Exam #3
16	April 20th Section 5.5	April 22nd Review/catchup day	April 24th Final exam, 11:30-14:00

Problem Sets through Exam #1

Boldface problems are particularly advanced and will test problem-solving skills beyond the core of the course material.

- Complete by *January 16* in preparation for *Quiz #1*:

    - *Section 2.1:* 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, **21**, 23. These problems may require a calculator.
    - *Section 2.2:* 1, 3, 5, 7, 9, 11, 15, 17, 29, 31, **33**, **35**.
    - *Section 2.3:* 1, 11, 13, 15, 17, 19, **21**, 23, **27**, 31, 37, **39**, 41, 43, 45, 49, **61**.

- Complete by *January 30* in preparation for *Quiz #2*:

    - *Section 2.4:* 1, 3, **5**, **7**, 9, 11, 13, 15, 17, 19, 21, 23. These problems may require a calculator.
    - *Section 2.5:* 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 46, 49, 51, 53.
    - *Section 2.6:* 1, 3, 5, 7, 9, 13, 15, 17, 19, 21, 23, **25**, 29, 31, 35, 37.
    - *Section 2.7:* 1, 5, **7**, 9, 11, 13, 15, 17, 19, 23, 27, 29, 31, 33, 35, 37.

- Complete by *February 6th* in preparation for *Exam #1 and Quiz #3*:

    - *Section 2.8:* 3, 5, 9, 11, 13, 21, 23, 25, **27**, 29, 31, 37, 39, 43, 45.
    - *Section 3.1:* 4, 7, 10, 11, 19, **23**, 25, 29, 33, **47**, 51, **53**.
    - *Section 3.2:* 1, 5, 7, 11, 17, 23, 25, **27**, 31, **41**, **42**, 43, 45, 47, 53, **57**.