Calculus I

Northern Michigan University

Winter 2020

Course Instructor

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Learning Outcomes

This course is an introduction to the basic notions of calculus. The overall goal is to understand the *fundamental theorem of calculus*, a beautiful interplay between the notions of *derivative* (i.e. the instantaneous rate of change) of a function, and the *integral* (i.e. the relative accumulation) of a function. Each of the topics leading up to and including the fundamental theorem of calculus will be explored in detail, including their variety of **applications** in real-world problems. By the end of the class, students will be comfortable making calculations with, and applying:

- functions of one variable (e.g. $x^q, \sin(x), \arccos(x), e^x, \ln(x), \ldots$)

- limits of functions: $\lim_{x \to a} f(x)$

- derivatives and antiderivatives of functions: $f(x) \rightsquigarrow f'(x)$ and $f(x) \rightsquigarrow \int f(x)$

- integrals of functions: $\int_a^b f(x)dx$

- the *fundamental theorem of calculus*: $f(b) - f(a) = \int_a^b f'(x)dx$.

Course Meeting Times

ma161-03
MWRF 14:00-14:50
HRDN 235A

Course Webpage

The course webpage can be found at the following link.

http://euclid.nmu.edu/~drowe/teaching/winter_2020/w20_ma161.html

Course Notes and Textbooks

My online notes will serve as your main reference. If you want to read another source, below is a recommended textbook. The course webpage details which chapters to focus on.

· Michael Sullivan, Kathleen Miranda, *Calculus, Early Transcendentals*, 2019.

There is also a wide variety of open calculus textbook materials. You may like the one below:

· *Calculus: Volume 1*, OpenStax, 2016.
https://openstax.org/details/books/calculus-volume-1

Grading

Problem Sets	35%
Tests	35%
Final	30%

Your lowest problem set and test will be dropped from your grade calculation.

Grade Scale

90-100%	A
80-89%	B
70-79%	C
60-69%	D
0-59%	F

Late Policy

There will be a **zero tolerance** late policy for this class. Up to and including the due date of a problem set, you can either submit it in class, or use the folder outside my office (JXJ 2228) until the exterior doors of the Jamrich building (M-R 6am-2am, F

6am-6pm) or the department suite (M-F 6am-9pm) lock up for the day.

Advice

Learning is an active *process*, and it is critical that you be respectful of this process. I will be working very hard to make this class exciting, engaging and clear, but you will have responsibilities as well. **It is critical that you attend every class**. You need to be *present* and *engaged*. When learning math, you cannot simply sit back and let the information soak in; you must invest your time, little by little, struggling with concepts and problems, making mistakes, and then finding the solutions.

Accessibility

If you have a need for disability-related accommodations or services, please inform the *Coordinator of Disability Services* in the Dean of Students Office at 2101 Hedgcock Building (906-227-1700 or disserv@nmu.edu). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.