Professor: David McClendon (2046 ASC, phone x2574 (231-591-2574 off campus), hours TWR 2-3, M 5-6 or by appointment, email: `mcclend2@ferris.edu`)

Lectures: MTR 12-12:50 in STR 137.

Computer lab sessions: Wednesdays 12-12:50 in STR 105.

Textbook: *Basic Technical Mathematics with Calculus*, 9th edition, by Washington (ISBN 0-13-814226-2).

Required Software: A piece of software called *Mathematica* is required for this course. Information about where and how to purchase this software is on the attached handout.

Web: This course has a Blackboard page at FerrisConnect (accessed through MyFSU); this page contains lecture notes, handouts, old exams, and lecture notes. Check this page regularly for announcements.

Prerequisite: Math 126 or 130 with a grade of C- or better, or the equivalent. Essentially this means algebra and trigonometry. What's most important is that you can manipulate expressions with variables in them, solve equations, and use function notation. Some of this information will be reviewed as needed.

Some other things that might be useful:

- Properties of Logarithms (the first four properties hold for logs with any base, including ln)
  1. $\log(AB) = \log A + \log B$
  2. $\log\left(\frac{A}{B}\right) = \log A - \log B$
  3. $\log\left(\frac{1}{B}\right) = -\log B$
  4. $\log(A^C) = C \log A$
  5. $\log_b A = \frac{\ln A}{\ln B}$
- Values of the Trigonometric Functions:

x in rad	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$	π	$3\pi/2$
x in deg	$0°$	$30°$	$45°$	$60°$	$90°$	$180°$	$270°$
$\sin x$	0	$1/2$	$\sqrt{2}/2$	$\sqrt{3}/2$	1	0	-1
$\cos x$	1	$\sqrt{3}/2$	$\sqrt{2}/2$	$1/2$	0	-1	0
$\tan x$	0	$1/\sqrt{3}$	1	$\sqrt{3}$	undefined	0	undefined

- Trigonometric Identities
  1. $\sin(-x) = -\sin x$; $\cos(-x) = \cos x$; $\tan(-x) = -\tan x$
  2. $\csc x = \frac{1}{\sin x}$; $\sec x = \frac{1}{\cos x}$; $\cot x = \frac{1}{\tan x}$
  3. $\tan x = \frac{\sin x}{\cos x}$; $\cot x = \frac{\cos x}{\sin x}$

Course material: Differentiation (including trigonometric and transcendental functions); applications of the derivative; Riemann integration; applications of integration.

Learning outcomes: After completing Math 216, it is my hope and expectation that students can solve the following basic calculus problems:

1. Compute basic limits.

2. Demonstrate an understanding of what the derivative means geometrically.
3. Compute derivatives using the product rule, quotient rule, chain rule and implicit differentiation, using technology where appropriate.
4. Solve related rates and applied optimization problems.
5. Evaluate definite integrals using the Fundamental Theorem of Calculus and elementary u-substitutions.
6. Find the area under a curve or between two curves.

Grading policy: Homework: 5%. Class participation: 5%. Quiz average: 5%. Lab assignments: 10%. Midterm exams (four of them): 15% each. Final exam: 15%. Grades will be curved at the end of the semester, but an average of 90% guarantees you at least an A-, an average of 80% guarantees you at least a B-, etc.

Attendance policy: I have no formal attendance policy. That said, **nothing** is more correlated with strong performance in my classes than attendance in lectures.

Homework: There will be daily homework assignments, due in class on the dates listed on the attached sheet titled "List of Due Dates". These assignments are not always collected. Homework which is collected will be graded for completeness only (not for correctness), i.e. I will check to see that you have attempted almost all of the problems and that you are showing a sufficient amount of work, and while I will comment on the correctness of your computations, the correctness of your work will not affect your grade.

Quizzes: There will be 12 in-class quizzes on the dates listed on the course calendar (I reserve the right to change these dates if necessary). These are ≤ 10 minutes long and cover the material that has been covered in class since the previous quiz or exam. The lowest three quizzes are dropped; the other nine are averaged to give your quiz average. Makeup quizzes are not given under any circumstances.

Lab assignments: Most days that we meet in the computer lab, you will be given a lab assignment which requires you to use the computer package *Mathematica*. You will be given time during the class session to start the lab, but will be required to finish the lab on your own time. These labs will be due one week after they are assigned, and are graded for correctness.

Midterms: There are four midterms given in class on the dates listed on the attached calendar. You will not be permitted to use any study aids, calculators or computers on the exams. The midterms are not directly cumulative, but mathematics is "inherently cumulative".
You may make up an exam that you miss (whether your absence is excused or not) but the makeup exams are considerably more difficult. If you miss an exam, contact the professor; you are to make up the exam at the *earliest possible time*.

Final exam: The final exam is cumulative and as with the midterm, you will not be permitted to use any study aids or calculators. However, your final exam score is guaranteed to be no worse than the second lowest of your four midterm exam grades.

Technology usage: Calculators are never, ever, ever permitted on any quiz or exam - questions on quizzes and exams use "easy" numbers and expressions that a calculus student should reasonably be able to compute and manipulate by hand. That said,

we will learn how to use a software package called *Mathematica* which you will use on lab assignments (and some homework).

Getting help: The best place to receive help is my office. In class, I will not have time to take many homework questions, and I will not be able to present all perspectives on a topic. In office hours, I am able to discuss the material at a much more friendly pace and offer some alternate viewpoints that may help you understand the material better.

If you cannot make my scheduled office hours, you can come talk to me anytime my office door is open. Also, I am more than happy to make an appointment to discuss the material with you. Send me an email.

Students with disabilities who require reasonable accommodations to fully participate in course activities or meet course requirements should register with the Educational Counseling and Disability Services office (x3057, `ecds@ferris.edu`). While ECDS will send me a letter outlining the accomodations to make for you, I would appreciate it if you could contact me immediately for assistance with any necessary classroom accomodations.

Academic dishonesty: Papers will be monitored for "magic answers". Issues with academic dishonesty are taken very seriously, will almost always result in an F for the class, and will be referred to the Office of Student Conduct.