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 3:00-3:50 in Starr 120; Wednesdays we will meet in the computer lab in Starr 105.

Textbook: There is no required textbook. If you want to buy a textbook, I recommend *Calculus* (any edition) by Larson and Edwards; we will be covering material in Chapters 7 to 10 of the Larson textbook.

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 handouts, old exams, and lecture notes. Check this page regularly for announcements.

Lecture Notes: I have divided my lecture notes for Math 230 into 16 pdf files that I call "packets" available on Blackboard. You should print the appropriate packet and bring that packet to class according to the schedule on the attached course calendar (with this syllabus, I have provided you a copy of Packet 230-1). These packets also contain the homework problems (with answers) at the end. If you do not have access to a printer, come by my office and I will print copies for you.

Extra Credit: I eventually want to turn my lecture notes into course packs for students, but before that happens I need to get all the typos and errors out. To get your help in this endeavor, I will award you extra credit for any error you can find in the lecture notes (I am especially looking for incorrect homework solutions but typos, etc. also count) that no other student has found yet.

Prerequisite: Math 220 with a grade of C- or better, or the equivalent. A list of useful mathematical facts from trigonometry and calculus is distributed with this syllabus, and we will review the high points of Calculus I during the first week of class.

Course material: Techniques of integration; applications of definite integrals; parametric equations; infinite series.

Learning outcomes: After completing Math 230, it is my hope and expectation that students will be able to:

1. recite and interpret definitions of calculus concepts and theorems, and correctly use calculus notation;
2. evaluate integrals with a variety of techniques (including substitutions, parts and partial fractions), using technology as appropriate;
3. write integrals which can be computed to find areas, volumes, arc lengths, probabilities and expected values, etc., and use technology to evaluate these integrals;
4. convert between Cartesian and parametric equations, understand the graphs of parametric equations, and use calculus to study two-dimensional motion;
5. classify (with justification) an infinite series as absolutely convergent, conditionally convergent or divergent;

6. write the Taylor series of a smooth function and apply Taylor series to solve problems.

Grading policy: Homework: 5%. Attendance and in-class activities: 5%. Lab assignments: 12%. Quiz average: 8%. Midterm exams (three of them): 18% each. Final exam: 16%. 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 (other than that we'll do some things in class from time to time that contribute a small amount to your grade). That said, **nothing** is more correlated with strong performance in my classes than attendance in lectures.

Homework: There will be frequent 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 assignments can be found at the end of each packet of the lecture notes. 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 $10 - 15$ 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: Every time 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 are due a week after they are assigned, and are graded in two parts: first, for your willingness to work on the lab for the entire lab session, and second, for correctness.

Midterms: There are three midterms given in class on the dates listed on the attached calendar. You will not be permitted to use any study aids or calculators on 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 worst of your three 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.

DATE	CLASS ROOM	QUIZ/ EXAM	PACKET AND TOPIC
M 8.25	STR 120		230-0: Review of limits
T 8.26	STR 120		230-0: Review of derivatives
W 8.27	STR 105		*Mathematica* lab activity: introduction and troubleshooting
R 8.28	STR 120		230-0: Review of integrals
M 9.1			*No class - Labor Day*
T 9.2	STR 120		230-1: Integration techniques: rewriting the integrand
W 9.3	STR 105		*Mathematica* lab activity: plots and differential calculus
R 9.4	STR 120		230-1: Integration techniques: elementary $u-$substitutions
M 9.8	STR 120		230-1: Integration techniques: complicated $u-$substitutions
T 9.9	STR 120	Quiz 1	230-2: Integration techniques: parts
W 9.10	STR 105		*Mathematica* lab activity: integration
R 9.11	STR 120		230-2: Integration techniques: parts
M 9.15	STR 120	Quiz 2	230-3: Integration techniques: partial fractions
T 9.16	STR 120		230-3: Integration techniques: partial fractions
W 9.17	STR 105	Quiz 3	*Mathematica* lab activity: partial fractions
R 9.18	STR 120		230-4: Improper integrals I
M 9.22	STR 120		230-4: Improper integrals II
T 9.23	STR 120		230-4: Improper integrals III
W 9.24	STR 105	Quiz 4	*Mathematica* lab activity: improper integrals
R 9.25	STR 120		Review for Exam 1
M 9.29	STR 120	**EXAM 1**	
T 9.30	STR 120		230-5: Applications of integration: area between curves I
W 10.1	STR 105		*Mathematica* lab activity: area
R 10.2	STR 120		230-5: Applications of integration: area between curves II
M 10.6	STR 120	Quiz 5	230-6: Applications of integration: volume (disc method)
T 10.7	STR 120		230-6: Applications of integration: volume (shell method)
W 10.8	STR 105		230-6: Review of techniques to evaluate volumes
R 10.9	STR 120	Quiz 6	230-7: Applications of integration: arc length
M 10.13	STR 120		230-9: Applications of integration to probability I
T 10.14	STR 120		230-9: Applications of integration to probability II
W 10.15	STR 105		*Mathematica* lab activity: applications of integration
R 10.16	STR 120		230-10: Introduction to parametric equations
M 10.20	STR 120		230-10: Parametric equations of common graphs
T 10.21	STR 120	Quiz 7	230-10: Calculus of parametric equations I
W 10.22	STR 105		*Mathematica* lab activity: parametric equations I
R 10.23	STR 120		230-10: Calculus of parametric equations II
M 10.27	STR 120		Review for Exam 2
T 10.28	STR 120	**EXAM 2**	
W 10.29	STR 105		*Mathematica* lab activity: parametric equations II

DATE	CLASS LOCATION	QUIZ / EXAM	PACKET AND TOPIC
R 10.30	STR 120		230-11: Introduction to infinite series
M 11.3	STR 120		230-11: Convergence of series; partial sums
T 11.4	STR 120		230-11: $\Sigma-$notation; changing indices
W 11.5	STR 105	Quiz 8	*Mathematica* lab activity: series
R 11.6	STR 120		230-12: Geometric series I
M 11.10	STR 120		230-12: Geometric series II
T 11.11	STR 120	Quiz 9	230-13: The Ratio Test
W 11.12	STR 105		*Mathematica* lab activity: the Integral Test
R 11.13	STR 120		230-14: The Integral Test; $p-$series
M 11.17	STR 120		230-14: The Comparison Test
T 11.18	STR 120		230-15: Alternating series
W 11.19	STR 105	Quiz 10	Review of convergence tests
R 11.20	STR 120		230-15: Absolute convergence
M 11.24	STR 120	Quiz 11	230-16: Introduction to Taylor series
T 11.25	STR 120		230-16: Examples of Taylor series
W 11.26			*No class - Thanksgiving break*
R 11.27			*No class - Thanksgiving break*
M 12.1	STR 120		230-16: Applications of Taylor series
T 12.2	STR 120		230-16: More with Taylor series
W 12.3	STR 105	Quiz 12	Review for Exam 3
R 12.4	STR 120	**EXAM 3**	
M 12.8 ?		**FINAL EXAM**	(cumulative; 2:00-3:40 PM in STR 120)