

Course Description : Functions, limits, derivatives of algebraic, trigonometric, exponential and logarithmic functions, curve sketching, related rates, maximum and minimum problems, definite and indefinite integrals with applications.

Prerequisites : MRS 800 or C or better in MATH 2312 or its equivalent

Prepares for : MATH 2305, 2318, 2414

Text : No required text. Notes available online.

Paul Dawkins

paul.dawkins@lamar.edu

Office Hours : 12:30 – 2:30 Monday thru Thursday or by appointment.

Office : Lucas 201

<http://www.math.lamar.edu>

880-2258

<http://tutorial.math.lamar.edu>

Grading : Grades will come from the following sources in this class.

Written Homework : Homework will typically be due 1- 1½ weeks after I hand the set out. Each homework assignment will be typically worth a total of 10 points and only selected problems from each assignment will be graded. Homework is due at the start of class (*i.e.* the moment that I walk into the classroom and start talking) on the day that it is due. Any homework handed in after this point is late and will not be accepted. I will drop your lowest homework score at the end of the semester.

Hour Exams : There will be four hour exams each worth 100 points. The material covered on each exam and tentative date for the exam is listed on the Syllabus for my notes. Because I'm fixing the material on each exam at this point scheduling will be very tentative at best. It is your responsibility to get to class and find out the actual date of the exam!

Comprehensive Final Exam : There will also be a comprehensive final exam worth 200 points. The final will be on Friday, December 7 from 8:00 AM --- 10:30 PM (provided I read the exam schedule right).

Lowest Test Score Replacement : After final exams are given I will replace your lowest test score with the percentage on your final exam provided it will help your grade. For example if your lowest grade is a 72 and you have a final exam score of 164 then I will replace the 72 with $164/200 (x 100) = 82$. If on the other hand your final exam score is 128 I will not replace the 72 with your final exam percent ($128/200 (x 100) = 64$) since it is lower than the 72.

Attendance : Attendance will be taken every day and will be used in any way I see fit in setting final grades.

Grading & Scale : I have a very simple grading scale. At the end of the semester I add up all the points that you have received and then divide that number by the total possible number of points. I then compare this percentage to the following scale and assign your grade. You should figure your grade after every exam.

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

Makeup Exams : I do not give makeup exams. Because I replace your lowest test score with the final exam percentage if you miss **ONE** exam then that will be the exam that is replaced by the final exam percentage provided you notify me in writing no later than 3 days after the exam was given with the reason you missed the exam. If you miss two exams I will expect verifiable proof of very good reasons (my call on what is very good) for BOTH exams. If you provide such proof we will take care of the second missed exam at that point. To date no one has convinced me they had a good reason for missing two exams.

Calculators : No graphing calculators or calculators capable of doing calculus will be allowed during exams. If I see you using one on an exam you will lose your calculator for the rest of the exam and you will lose 20 points on your exam score. Failure to bring an appropriate calculator to exams is your problem not mine.

Lectures/Help Session : This class meets five days a week. During a typical week we will lecture four days and on one day (unless I need to make up some time) we will hold a “help session” for you to ask questions. The help session is a real class day and you are expected to attend it. I will let you know which day it will be as soon as I know what day will be holding it on each week.

Web Pages : The web page for this class can be accessed at <http://www.math.lamar.edu>. Click on the faculty link, my name, then the class link from the menu as the top of the page. On this page you will find things like exam dates, homework assignments, homework solutions and other handouts. Information put on this site is NOT official. If there is ever any discrepancy between the web site and anything announced in class, then follow what was announced in class! Notes for the class may be downloaded from <http://tutorial.math.lamar.edu>. Please note that the assignment problems on <http://tutorial.math.lamar.edu> are **NOT** your homework assignments. Those are for other purposes. **Your homework assignments/solutions are at <http://www.math.lamar.edu>.**

Learning Outcomes : Upon completion of the course, students will:

1. Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals.
2. Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.
3. Determine whether a function is continuous and/or differentiable at a point using limits.
4. Use differentiation rules to differentiate algebraic and transcendental functions.
5. Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.
6. Evaluate definite integrals using the Fundamental Theorem of Calculus.
7. Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus.
8. Compute the limit of a function;
9. Interpret various definitions of a derivative including rate of change, slope of tangent line, and velocity;
10. Find first order and higher order derivatives using the quotient rule, product rule, chain rule, and implicit differentiation;
11. Find tangent lines, related rates, linear approximations, and solve optimization problems;
12. Identify intervals of increase, decrease, and concavity for a function;
13. Apply the Mean Value Theorem and L'Hospital's Rule;
14. Compute definite and indefinite integrals, using various methods including the substitution rule;
15. Find volumes of solids of revolutions using rings and shells.

Core Curriculum Outcomes: Upon completion of this course, the student will demonstrate his or her abilities to think critically, communicate quantitative information, and apply mathematical concepts:

1. Critical Thinking: Develop a logical, consistent plan to solve a problem, recognize consequences of the solution, and articulate a reason for choosing solution method.
2. Communication Skills: Use and present quantitative information in connection with an argument or problem solution and explicate it in an effective format.
3. Empirical and Quantitative: Construct and present a detailed problem statement with evidence of relevant contextual factors and possible approaches for solving the problem, then implement a solution and review the results.

Dates To Know :

September 3 : Labor Day. No classes.

November 22 & 23 : Thanksgiving. No classes.

December 4 : Last day of classes.

Drop Dates : See Important Student Information handout for drop dates.

Disclaimer : While I have made a sincere effort to ensure that this syllabus is correct, changes may be required. I will announce any substantive changes during a regularly scheduled class. If you find an error or omission, please advise me at once so that the other members of the class may be advised.