

Course Description : Functions of several variables, partial derivatives, vector functions, multiple integrals in different coordinate systems, line and surface integrals of both functions and vector fields, some basic 1st and 2nd order differential equations.

Prerequisites : Grade of C or better in MATH 2414 or its equivalent

Prepares for : MATH 4302, 4310

Text : No required text. Notes available online.

Paul Dawkins

Office : Lucas 201

880-2258

pdawkins@gmail.com

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

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

Office Hours : 12:45 – 2:30 Monday thru Thursday or by appointment.

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. I will post complete solutions to the homework set shortly after I have graded the homework. 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. The total homework grade is **usually** worth about the same as one exam. **Homework assignments/solutions can be found at <http://www.math.lamar.edu>.**

Hour Exams : There will be three 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 8 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 $164/200 (\times 100) = 82$. If on the other hand your final exam score is 128 I will not replace the 72 with your final exam percent ($128/200 (\times 100) = 64$) 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 so you know where you stand.

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.

Lectures : This class meets four days a week. We will be lecturing each day.

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://tutuorial.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, student will:

1. Perform calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
2. Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
3. Find extrema and tangent planes.
4. Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, the Divergence Theorem, and Stokes' Theorem.
5. Apply the computational and conceptual principles of calculus to the solutions of real-world problems.
6. Convert and graph basic equations in Cartesian, cylindrical, or spherical coordinates;
7. Describe 3-D motion using vector functions;
8. Compute limits of functions of several variables;
9. Apply the chain rule to finding derivatives;
10. Apply Lagrange Multipliers to find extrema subject to constraints;
11. Change variables in multiple integrals;
12. Define a vector field and sketch a simple vector field;
13. Compute a line integral with respect to arc length, x , y , and z ;
14. Compute a line integral over a vector field;
15. Identify a conservative vector field and compute a potential function for a conservative vector field;
16. Parameterize a surface.

Dates To Know :

September 4 : Labor Day. No classes.

November 23 & 24 : Thanksgiving. No classes.

December 5 : 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.