

# MATH 2210—Multivariable Calculus

Section 01, MWF, 8:00–8:50 am, NIB 135, CRN: 20407

Spring 2011—3 credits

**Instructor:** Taylor Jensen

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**Office Hours:** MTWRF 9:00–9:50 am; TR 11:00–11:50 am; other times by appointment only

**Additional Help:** NIB 202 or Browning Learning Resource Center

Required Text: *Calculus: Concepts and Contexts* (4<sup>th</sup> edition) by James Stewart

Calculator Requirement: You **must** have a graphing calculator. The TI–83 (any version), TI–84 (any version), or TI–89 is recommended.

Prerequisite: You **must** meet at least one of the following minimum requirements. Moreover, this requirement must have been met within the past two years.

- Passed Math 1220 with a “C” or better.
- Earned a 4 or 5 on the Advanced Placement Calculus BC Exam.

## Course Description & Course Objectives

This course is the continuation of Math 1220. Topics covered include partial derivatives, gradient vectors, Lagrange multipliers, multiple integrals, line integrals, Green’s Theorem, surface integrals, the Divergence Theorem, and Stokes’ Theorem. Course includes lectures, homework assignments, quizzes, tests and a final comprehensive exam. Successful completion of the course helps prepare students for upper-division mathematics courses.

All classes in mathematics at Dixie State College of Utah support the general education goals of the college. Each mathematics class will:

- Require students to perform mathematical processes including fractions, percentages, decimals, proportions/ratios, algebraic equations, and/or calculus techniques
- Provide students with application problems that use a variety of methods including arithmetical, algebraic, and geometric methods
- Challenge students to make inferences from mathematical models that include formulas, graphs, and tables
- Provide students with real-life applications that use a variety of mathematical functions

Upon successful completion of Math 2210, a student will demonstrate meaningful understanding of basic calculus concepts. Additionally, such a student will demonstrate the ability to:

- Use plane and space vectors to solve geometry and physics problems
- Use space curves to analyze an object’s motion
- Use contour diagrams to analyze the behavior of a function of several variables
- Use partial derivatives to solve optimization problems
- Compute double and triple integrals using rectangular, cylindrical, and spherical coordinate systems
- Use line integrals to compute the work done along a curve by a vector field
- Use surface integrals to compute the flux of a vector field through a surface
- Use multiple integrals as a tool to compute line and surface integrals

## Behavior Policies

1. **Your attendance and behavior are expected to reflect your dedication to excellence as a university student.** You are expected to attend class, participate in discussions and group work, and to use class time for Math 2210 activities only.
2. **You must abide by all regulations set forth in the “Student Rights and Responsibilities Code” (DSC Policy 5.33).** These regulations can be found online at <http://www.dixie.edu/humanres/polstu.html> (then click on the link to DSC Policy 5.33). In particular, you should be aware of your obligations pertaining to academic performance (“Academic Performance Responsibilities,” DSC Policy 5.33.5).
3. When completing homework, working together is ok—in fact, I encourage it. However, copying another person’s work is not ok. Furthermore, you should try your very best to do a problem before you look at the solutions manual for help. Most importantly, sharing test information is not ok, and if you’re caught, you’ll receive an “F” for the course.

## Homework Policies

**The goal of your doing homework should be to gain understanding of calculus—above and beyond rote memorization and superficial knowledge of formulas and “facts.”** With that in mind, let me present my basic policies:

1. You will read a section from the textbook before attending the scheduled lecture about that particular section. After actively participating in the classroom discussion on the section, you will then complete (as homework) all assigned exercises from that section.
2. Each class day is divided into three time periods: first, you will take a quiz which is based on homework which has already been considered in class; second, I will lecture on the sections which you read before coming to that class session; third, you will ask me questions about homework problems you have completed.
3. Daily attendance is worth 1.25 points for each class day. If you will be absent for one or more class days, you must ask me for permission to miss those days—beforehand and in writing—so I can decide whether or not to grant you the opportunity to make up the points from the days you will miss. At the end of the semester, your total in attendance points will be rounded down (if necessary), not up. Additionally, up to 5 points will then be added to your attendance total in case you missed one or two class days due to unforeseen circumstances.
4. Homework will be turned in the class day following the closing of every midterm exam as well as on the day the final exam is administered. Each homework “packet” will consist of all the sections covered on the corresponding midterm exam (or final exam). Each packet will be worth 16 points, and I will grade these packets on completeness only, not on correctness.

## Exam Policies

1. **Exams cannot be made up for any reason.** Midterm exams will be administered in the Testing Center, while the final exam will be administered in our regular classroom.
2. You must bring the following items to each midterm exam: (a) #2 pencil (not mechanical); (b) photo ID. Moreover, you are allowed to bring your graphing calculator as well as one “cheat

sheet” (8½ by 11 inches, front and back) to each midterm exam. **Important:** You should photocopy the cheat sheet before you take a midterm exam if you wish to have a permanent copy, because the Testing Center staff will not allow you to take it with you after you complete the exam (for test integrity purposes).

3. A 10% penalty will be given to any student showing up more than 10 minutes late for the final exam. A 30% penalty will be given to any student missing the exam period by more than an hour. (This is to ensure students do not “hang back” and study longer than their classmates.)

## Grading

Attendance	50 points
Homework (2 pts. free)	50 points
Exams (60 pts. each)	180 points
Final Exam (comprehensive)	120 points

There are 400 total points possible. Your grade will be determined according to the percentage of points you earn in this course.

≥ 92.0% A	≥ 89.0% A–	≥ 86.0% B+	≥ 82.0% B
≥ 79.0% B–	≥ 75.0% C+	≥ 70.0% C	≥ 67.0% C–
≥ 64.0% D+	≥ 60.0% D	< 60.0% F	

## Disability Resource Center

If you are a student with a documented physical or mental impairment that will substantially limit a major life activity, please contact the Disability Resource Center (DRC) on the main campus. The Center Coordinator and staff will assist you in evaluating your eligibility for services. If you are deemed eligible, reasonable accommodations that are appropriate for your disability will be assigned. If you have any questions concerning this process, please contact the Center at (435) 652–7516 or go to the DRC on the ground floor of the Financial Aid Office.

## Website Resources

Library	<a href="http://library.dixie.edu/">http://library.dixie.edu/</a>
Writing Center	<a href="http://new.dixie.edu/english/dsc_writing_center.php">http://new.dixie.edu/english/dsc_writing_center.php</a>
Testing Center	<a href="http://new.dixie.edu/testing/">http://new.dixie.edu/testing/</a>
Tutoring	<a href="http://dsc.dixie.edu/tutoring/index.htm">http://dsc.dixie.edu/tutoring/index.htm</a>
Career Center	<a href="http://new.dixie.edu/career/">http://new.dixie.edu/career/</a>

## Communication Policy

Important class and college information, including lecture notes, syllabus changes, etc. for this class, will be sent to either the preferred email account you submitted to Dixie State College when you began school here or to your “Dmail” account. This information includes your DSC bill, financial aid and scholarship notices, notification of dropped classes, reminders of important dates and events, and other information critical to your success in this class and at DSC in general. You will be held responsible for any emailed information sent to you by me or by DSC, so please check your email account often. When trying to get in contact with me, the best option is to email me or call my office phone and leave a message.

## **My Philosophy**

I believe every future scientist or engineer, including **you**, can learn the material taught in this course. I am confident that learning this material will make a **vital** difference in your ability to apply mathematical reasoning to help solve the complex problems facing our world. Learning about mathematics should be **fun!** If we're not having fun while we learn, we're not really learning! ☺

## **Note about Final Grades**

I am only willing to change a student's final grade if I have made a recording error on my gradesheet. In order to be fair to all students, I must assign each student's grade based on his or her overall performance in the class. It is not right for a teacher to change a student's grade for any subjective reason once that grade has been assigned; hence, I will not do it.

## Lecture Schedule

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<u>DATE</u>	<u>LECTURE</u>	<u>DATE</u>	<u>LECTURE</u>
1/10	Intro	3/7	12.8
1/12	11.1	3/9	Review (Mid2)
1/14	11.2	3/11	Review (Mid2)
1/17	<b>MLK Jr. Day</b>	3/14	<b>Spring</b>
1/19	11.3	to 3/18	<b>Break</b>
1/21	11.3		
1/24	11.4	3/21	12.9
1/26	11.5	3/23	13.1
1/28	11.6	3/25	13.1
1/31*	11.6	3/28	13.2
2/2	11.7	3/30	13.2
2/4	11.8	4/1	13.3
2/7	Review (Mid1)	4/4	13.4
2/9	Review (Mid1)	4/6	13.5
2/11	12.1	4/8	13.5
2/14	12.2	4/11	13.6
2/16	12.3	4/13	13.6
2/18	12.3	4/15	13.7
2/21	<b>Presidents Day</b>	4/18	13.8
2/23	12.4	4/20	Review (Mid3)
2/25	12.5	4/22	Review (Mid3)
2/28	12.6	4/25	Final Review
3/2	12.7	4/27	Final Review
3/4*	12.7		

\* The last day you may drop the class without a “W” appearing on your transcript is Tuesday, February 1<sup>st</sup>. The last day you may drop the class is Friday, March 4<sup>th</sup>. Other important dates on the academic calendar for this semester can be found online at

<http://dixie.edu/reg/?page=spring2011>

Midterm exams open on or around the second class day on which we review the preceding material. They close **two days** after they open.

The final exam will be at 7:30 am on Monday, May 2<sup>nd</sup>, in NIB 135.