Math 213.1 **Spring 2009**

Professor: Dr. Martin Montgomery
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Course Web Page: http://cyrus.piedmont.edu/users/mmontgomery/
Textbook: *Calculus, 8th ed* by Larson, Hostetler, and Edwards.
Time: Monday, Wednesday, Friday 10:00–10:50. Lab time: Tuesday 12:30-1:30.
Office Hours:

Course Description: This course will cover differential calculus and the basics of integral calculus for functions of several variables. Because I do not like the book, I will providing you with many supplements to help understand the material. There will be at least 5463 typo$ in the homework, worksheets, exams, and solutions I make for this course. Part of you job in learning the material is to recognize and correct mistakes as you find them.

Grading:

Your grade in this course will be based on your performance on homework/worksheets, quizzes, three exams during the 16 week term, attendance, and the final exam.

Homework

Homework will usually be collected once every week (see attached schedule) at the beginning of class. Homework assignments will be posted on the course webpage. I will provide some solutions to homework problems (on the course webpage) as soon as you submit them. For this reason, I do not accept late homework unless you give me prior notification and/or there is some serious and compelling reason that you could not turn in the assignment. See attached "Homework" page for more information on homework guidelines.

Exams

There will be two exams during the regular 16 weeks of the course and a final exam. See the attached schedule for exam dates. The final exam is scheduled for 8–10 A.M. December 10.

Quizzes

During weeks in which homework is not due, we will have a quiz during the Thursday lab. Quiz problems will be similar to homework, worksheet, and lecture problems from the preceding two weeks. On Monday, I will give you a mini-review (no more than five minutes) of what to expect on the quiz. **YOU WILL NEED TO STUDY FOR EACH QUIZ!** If you know you are going to miss a quiz, please arrange to take an alternate quiz **BEFORE** the scheduled quiz time. Otherwise, the missed quiz will be counted as a 0. .

Attendance: Piedmont College is instituting (or rather, enforcing) a new attendance policy. Here it is:

Attendance, timeliness, and participation are required and part of your grade. More than the allotted number of absences for any reason will result in failure of the course. The maximum allotted number of absences is as follows:

Day classes meeting three times a week for entire semester: **6 absences**

Courses operating under a different format to be determined by the professor of the course. **All absences for participation in recognized school events (e.g., athletics, drama, field trips) will count against the announced absence policy**. *A request for consideration of an exception to this policy must be submitted in writing to the appropriate Dean.*
My understanding of this policy is that, after Dean approval, recognized school events will count as absences, but will be excused in the sense of the total number of absences allowed (6 in our case). However, any unexcused absence will be counted with the excused absences, possibly putting a student over the allowed four. For example, let's say a student, call her Martina, misses four classes while traveling to softball games, two classes for field trips, and one class because of a documented illness . Although she has seven total absences, since all of them are school sanctioned, Martina is not in trouble (as long as he meets with his professors to make up missed work). However, if Martina decides to take the day off to watch the episode of *Cheaters* where host Joey Greco gets stabbed, she will now have a total of eight absences, one of which is unexcused. Therefore the full, harsh penalties now apply to Martina.

The penalty for exceeding the alloted absences is automatic failure (an "F") in the course. Seriously!

Letter Grades: The course is graded using the standard breakdown for letter grades, i.e. 90-100 for a letter grade of A, 80-89 for a grade of B, 70-79 for a grade of C, 60-69 for a grade of D, and F for 59 and below. Note that routine mastery of the material generally earns a letter grade of B or C. Earning a grade of A requires synthesis and creativity.

Homework	15%
Quizzes	15%
Exam 1	17.5%
Exam 2	17.5%
Exam 3	17.5%
Exam 4	17.5%

Some Legal Disclaimer Stuff

Prerequisite: Calculus II or some similar course.

Course Objectives: By the end of the course, students should understand fundamental principles of:

- A synthesis of calculus and algebra in order to compute Arc Length.
- Single variable calculus as it relates and differs from multi-variable calculus
- Vectors Properties and ways to construct objects in higher dimensions (even beyond 3!)
- Green's Theorem, Stokes Theorem and the geometry related to each.

Academic Integrity: The college imposes strict penalties for academic dishonesty, which is defined as follows

- **Cheating:** Intentionally using or attempting to use unauthorized materials, information or study aids in any academic exercise.
- **Fabrication** Intentional and unauthorized invention or falsification of any information or citation in an academic exercise.
- **Facilitating Academic Dishonesty:** Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.
- **Plagarism:** Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercies

Details and administrative procedures may be found in the Piedmont College Student.

Withdrawal: See student catalog or other supplementary material for policy and dates associated to withdrawals.

Students with Disabilities: Piedmont College makes every effort to provide reasonable and appropriate accommodations to students with disabilities. Accommodations must be coordinated through the Office of Counseling and Career Services by contacting the director at 1-800-277-7020 ext. 1259 or by email - kcutrell@piedmont.edu. Students are responsible for providing accurate and current documentation of their disability and for making a written request to the Director of Counseling and Career Services before receiving accommodations. Students with special needs (disabilities, problems, or any other factors that may affect their performance or that require special instructional strategies) should also make these needs known to the professor/instructor during the first class session.

Homework

The most common experience with math homework is to focus on getting the right answer with little regard to the overall process. Common to this experience is procrastinating, giving up on a problem if you don't get it right the first time, getting help from classmates, and submitting a final product that is often difficult to follow. If this sounds familiar with regards to your own homework, prepare to make an adjustment. Below are guidelines and information that you must follow when you submit homework.

Guidelines

- One assignment will be due (roughly) each week (see attached schedule).
- In order to receive any homework credit in the course, you must turn in **every** assignment. In addition, each assignment must be **fully completed**.
- An assignment is fully complete if all the problems have a reasonable mathematical solution (possibly with mistakes). An incomplete or partially incomplete problem can be submitted, but **must be accompanied by a written explanation of why the problem is not correct or finished**.
- A written explanation will consist of at least a paragraph (or three sentences) stating 1. What you tried. 2. Why it didn't work. 3. A guess at what might work. Feel free to include any other relevant details of your thought process. All written explanations must use grammatically correct sentences.
- Each assignment will be graded twice. The first time I grade them, I will check to make sure you did all of the problems following the guidelines. If your assignment is incomplete, I will return it to you with no score. I will then ask that you resubmit it once you have completed all missing exercises with written explanations. The second time the assignment is graded, I will look at mathematical content. I will grade a select number of problems with an emphasis placed on clarity and correctness.

Information

- Start the assignment as soon as you receive it; don't procrastinate! Assignments will begin with more familiar problems and have more difficult/new problems at the end. Get the problems you know how to do early and then focus on the more challenging problems.
- You will first need to work out difficult problems on scratch paper. Once you have the idea of the solution you will then write it up for submission. **Do not** begin by writing all of the exercises on your paper, equally spaced apart. Try all the different approaches that might work before deciding on the answer you will submit. It is possible that your answer will be long.
- I encourage you to work in study groups, **as long as everyone does their own work!** This means that members of a study group will not have exactly the same answer to all of the problems. If I notice blatant copying, I will penalize you. If this cheating continues, the Dean of Arts and Sciences will be notified and you will face more severe punishment.
- I also encourage you to come speak with me if you have encountered a difficult problem. If it is early enough before the due date, I might actually do all or most of the problem for you. If not, I will probably give you a hint. Once you have submitted a completed assignment, I will happily do any problem from it for you.
- It is possible (although it will not happen often), that the only correct answer to a problem is a written explanation. This will mostly be due to the fact that a simple typo can turn a seemingly innocuous looking problem into an impossible task.
- One homework assignment will be dropped from your grade. The first assignment might very well be the most difficult because you don't quite know what to expect. I expect that you will quickly conform to the quidelines listed above.

Math 213 Lecture Schedule

Week	**Monday**	**Tuesday Lab**	**Wednesday**	**Friday**
0 Jan. 5–Jan. 9	No Class	No Class	No Class	Syllabus Calculus Review
1 Jan.12–Jan. 16	Volume of Solids	More Volume	Arc Length	More Arc Length **Homework 1 Due**
2 Jan. 19–Jan. 23	**MLK Day** (No Class)	Surface Area **Quiz 1**	More Surface Area	Parametric Equations **Homework 2 Due**
3 Jan. 26–Jan. 30	Calculus and Parametric Equations	More Arc Length **Quiz 2**	Intro to Vectors Dot Product	More Vectors **Homework 3 Due**
4 Feb. 2–Feb. 6	More Vectors: Cross Product	Exam 1 Review	**Exam 1**	Lines in Space
5 Feb. 9–Feb. 13	Planes	Functions of two or more variables	Surfaces	Functions and Surfaces **Homework 4 Due**
6 Feb. 16–Feb. 20	Calculus with several variable	Partial Derivatives **Quiz 3**	Tangent Planes	Normal Vectors **Homework 5 Due**
7 Feb. 23–Feb. 27	Directional Derivatives and Gradients	Extrema of Functions **Quiz 4**	More Extremes of $f(x, y)$	And More Extremes **Homework 6 Due**
8 Mar. 2–Mar. 6	Intro. to Integrals	Exam 2 Review	**Exam 2**	More Integrals
9 Mar. 9–Mar. 13	Spring Break Vacation	Spring Break Vacation	Spring Break Vacation	Spring Break Vacation
10 Mar. 16–Mar. 20	Double Integrals and Fubini	Change of Variables	More COV	Polar Coordinates **Homework 7 Due**
11 Mar. 23–Mar. 27	Surface Area	Triple Integrals	More Integrals	Cylindrical Coordinates **Homework 8 Due**
12 Mar. 30–April 3	Calculus and Vector Valued Functions	Vector Tangents **Quiz 5**	Vector Fields	Line Integrals **Homework 9 Due**
13 April 6–April 10	Independence of Path Conservative Vector Fields	Exam 3 Review	**Exam 3**	**Good Friday** (No Class)
14 April 13–April 17	Green's Theorem	More Green's Theorem	Surface Integrals	More Surface Integrals **Homework 10 Due**
15 April 20–April 24	Curl and Divergence	Intro. to Stokes' Theorem **Quiz 6**	More Stokes	And More Stokes **Homework 11 Due**
16 April 27–May 1	Divergence Theorem	Divergence and Stokes	More Stokes' Theorem	Exam 4 Review **Homework 12 Due**
17 May 4– May 6	**Exam 4** 8–10 A.M. May 6			