Welcome to Multivariable and Vector Calculus
MATH 223 – Section 4, Fall, 2008
MoTuWeTh 9:00 - 9:50 in BioWest 237

Multivariable and Vector Calculus is necessary for much of advanced science and engineering, and a key to a true understanding of disciplines as widely varied as electromagnetic theory, statistics, musical acoustics, and economics. It carries calculus into the real world, where very many things are functions of more than one independent variable. In addition, it is an exciting, beautiful, and challenging intellectual endeavor on its own merits. This handout gives you the outline of the course, and some administrative and supplementary information.

Website
If you have found this document, you have found the section website page. Information pertinent to the course, such as schedule changes will be posted to this page and announced in class.

Office Hours
My office hours are given in the weekly schedule posted to the section web site. Two will be held in the tutor room wherever that is located this semester, and I will announce which ones when I know. I am also available any time I am free, so you should be able to get help almost any day you want it; just ask! But you must ask, I cannot force help on you. My office is in the MTL, just south of the Mathematics Building, in room 123(A). My office phone is 626-8274, the Math Office (621-6892) will take messages and leave them in my box, and you can call me at home (319-2866) up to about 7 p.m. My e-mail is alexa@math.arizona.edu, and I check it daily. A link to tutoring information is on this web page.

Calculators
Each student is required to have and to know how to use a graphing calculator. Some examinations questions may require the use of such a calculator, and no calculator swapping will be permitted during exams. You may use any calculator you can carry which is not breathing, and which is not capable of communicating beyond your desk. The exams take into account the existence of very capable calculators; in particular you will need to show algebraic steps even if your calculator can do the whole problem instantly. I will use a TI-84 in class.

Attendance
This class meets Monday through Thursday in BioWest - 237 at 8:00 a.m. You should plan to attend every class, and are responsible for material covered or announced in class whether you are there or not. Department rules require me to drop anyone who does not attend the first classe, which I will do. After that, attendance will be taken daily. For the first month, an unexplained week of absence may result in an administrative drop. This is to avoid grade appeals to remove unnecessary failing grades assigned to
students who do not drop the course through oversight or negligence. Let me know if you are going to be away and we will schedule a time for me to cover material you miss. Please do not do your homework (or read newspapers) in class; I am old enough to find this extremely rude. Electronic nuisances such as cell phones, pagers, and other such modern delights must be turned off before you enter the classroom.

**Homework**

We will use WebAssign for most of the homework in this course, and the grades will be computed electronically. To create an account for our class go to [http://webassign.net](http://webassign.net) and click on the “Login Button”. Choose the “I have a Class Key button.” Our class key is “arizona 5089 3695.” You must do this even if you have used WebAssign in the past or are using it for another course this semester. There is a 14 day grace period starting the first day of class before you must purchase access (it costs about $15 and you do it online at the same web site). Each time you log in you will see a reminder about how much time you have left. There are instructions for webassign posted to the Math Department Home page. Got to [http://math.arizona.edu](http://math.arizona.edu), click on “academics,” then “Vector Calculus (Math223) Site,” and on the left under “Suggested Homework” find the “WebAssign Info” button. That should tell you all you need to know. Each weekly assignment will be worth ten homework points whether written or.

In addition to the WebAssign homework, I will assign a couple of problems each week to be done by hand. These should be:

- Complete, with all algebra and computations done out in detail.
- Neat
- One one side of the paper only
- On standard notebook paper, graph paper preferred
- Arranged in assigned problem order down the page
- Labeled with your name, section, assignment number and date
- Else I won’t grade them

Please do not turn in solutions with incorrect work crossed out, as this makes papers hard to grade. Some homework will require written descriptions of what you discover about a problem. Ensure your high school English teacher is not embarrassed. One homework problem will be on each of the hour exams. A class at this level should understand that having someone do your math homework for you is very much like having someone date your girl or boy friend for you, and about as sensible. You’ve probably heard of Governor Standish and his pal John.

Late homework will not be accepted. This should have no impact on your grade, as I will replace the two lowest written homework grades with
full credit. Should you have to miss a class you may arrange for a classmate to deliver your homework on the due date, or give it to me no more than a class day early.

Prerequisites
Throughout this course, we will use elementary calculus such as is covered in MATH-124/125/129 the prerequisites for this course. I do not have time to review this material, and I will assume that you know it. I will be happy to help with specific problems on an individual basis outside of class. However, if your grasp of the concepts in Reference 2 in the posted bibliography, the text for the prerequisite, is shaky you are going to have serious problems in MATH-223. You cannot learn differentiation and integration of functions of several variables if you can’t perform these operations on functions of one variable. Two double-value “Gateway” quizzes will be given during the first month or so of the class; one on one-variable integration and one on one-variable differentiation. Poor grades on these quizzes carry an obvious message. A set of review problems is at

http://math.arizona.edu/~calc

Grades
Grades will be taken weekly, often on Thursday, by class work, homework, or hour exam. Class work may be the results of whole-class or group efforts, or individual efforts. I use “pair work” on occasion; two students start a problem at the end of a class period, and finish it at home. The first couple of minutes of the next class period is used to check answers and turn the work in. Most class work is of such a nature that it will be impossible to make up, so I will make no attempt to do so. The lowest two of the class work scores will be replaced with full credit at the end of the course. Individual effort class work will look remarkably like a quiz. I will use the following grading scheme:

Homework: 75 points
Class work: 75
Gateways: 50
Hour Exam I: 125
Hour Exam II: 125
Hour Exam III: 125
Hour Exam IV: 125
Takehome: 50
Final (common): 250
Homework and class work are separately graded, and the scores adjusted so that flawless work is worth the number of points above. You are invited to work together, lots of very good learning is generated by sharing ideas about problems, and graduate students routinely belong to several study groups. The answers you submit, however, must be your own. I’d be delighted to meet with a study group, just ask me. Grades will be recorded as follows:

- A 900-1000
- B 800-899
- C 700-799
- D 600-699
- E Anything less

Any small adjustments to the grade intervals due to class performance will be made at the end of the semester, but the thresholds will only be lowered. If you earn 900 or more points you are assured an A. All quizzes and hour exams are closed book and closed notes. The University policy with respect to incomplete grades will be strictly followed; incompletes will be given only under extremely rare circumstances.

**Students with Disabilities**

If you anticipate issues related to the format or requirements of this course, please meet with me to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you register with Disability Resources (621-3268; drc.arizona.edu). You should notify me of your eligibility for accommodations by Friday, September 12, 2008. You are responsible for arranging to take exams at the DRC facility.

**Exams**

There are four hour exams, scheduled on the course syllabus posted to this web site, two gateways and a takehome practice final in addition to a common final. All electronic devices, particularly cell phones must be turned off during all exams. Silence and vibration modes are not allowed. The final exam will be a common exam for all sections of this course, prepared by the course supervisor. It will be from 2-4 p.m. on Monday, December 15, 2008. I will announce the location as soon as I know it. The University’s exam policy for final exam week will be strictly followed, particularly those regarding students with multiple exams on the same day. The regulations are at

http://www.registrar.arizona.edu/schedule071/exams/examrules.htm
NOW is the time to find out whether or not you have a problem.

**Missed Exams**

If you miss an exam for any reason, I will assign the same percentage score you earn on the final. A second exam missed for any reason is scored zero. It is to your advantage to take all exams at the scheduled times unless you are gifted with clairvoyance, and avail yourself of this scheme only in case of emergency. If you can get to the exam late, do so, and if possible I will stay to give you time to finish.

**Dropping the Course**

Should you decide to drop, please tell me. Until 19 September 2008, the drop is your decision, without penalty, but I ask that you tell me that you are leaving (so I don’t keep a useless grade record), and why (I may learn something). From 19 September to 17 October, the decision is still yours, but your academic record will reflect your current grade, calculated on the basis of work completed at the time of the drop, and a W will be recorded for passing work. Late withdrawals will be dealt with on a case by case basis, and such requests without a valid reason may or may not be honored. I am available to discuss your grades with you any time you wish.

**Academic Integrity**

Academic Integrity is extremely important. Please glance through the booklet on the Code of Academic Integrity which governs responses to violations. The material in this course is important to you. Cheating is stupid as well as highly penalized. Don’t.

**Questions**

Please ask as many questions as you have, and share them with the entire class, as others may have the same question. The only dumb question is one you cannot answer and do not ask. At the end of the day, the thing that really counts is how much you have learned - get your money’s worth, you are paying for this. On occasion I may have to defer a question that bothers you to cover necessary class material; if this happens or if for some other reason the issue is not cleared up, see me afterwards, or in my office, or call me, or e-mail me.

Again, welcome to Math 223. This is fun stuff, the legacy of centuries of work by truly creative mathematicians. It is fascinating in itself, and the gateway to lots of other fun stuff. I am very much looking forward to this semester, and to sharing the pleasure I get from mathematics with you.

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