

INSTRUCTOR: Janice Sklensky

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COURSE MATERIALS: *Multivariable Calculus, 3rd edition*, by Smith and Minton. There is also an optional student solutions manual.

Also, *Maple* is available for you to use on your own computer if it's connected to the campus network and is running a sufficiently recent operating system. It's also available in A102, the CS lab, and the computer in the library, the Kollett Center, or the GIS lab.

#### OVERVIEW:

Calculus I and II focus on single-variable functions. The restriction to a single variable gave us the opportunity to come to grips with the concepts, but limited the applications. In this course, we study the calculus of functions whose outputs are vectors in 2 or 3 dimensions, or whose inputs are points in 2 or 3 (or  $n$ ) dimensions, *or* whose inputs and outputs both live in more than one dimension. This allows us to move beyond curves in 2 dimensions, to curves that lie in 3 dimensions, or even to surfaces, making our models more realistic and, of course, more complicated. For more specifics, please see the syllabus.

This course is connected to Chem 355 and/or 356 (Physical Chemistry I and/or II).

#### COURSE STRUCTURE, GOALS AND EXPECTATIONS:

The main goal for this class is the obvious one – that you master the topics we develop. Secondary goals are that you continue to improve at reading technical text and at communicating mathematical material.

Math is a subject you can only learn by doing. I therefore provide you with plenty of opportunities to *do* math: responding to reading, in-class work, and problem sets (not to mention exams). Occasionally working with other students will provide you with opportunities to verbally communicate mathematics, while the weekly problem sets will provide practice with communicating mathematics in writing. Reading the text and responding to questions on the reading provide an opportunity to continue to improve at reading mathematics.

The rule of thumb for any college class is to expect to spend 2 to 3 hours working outside of class for every hour in class. No matter what your experience has been in other classes, *plan to spend at least 6-9 hours per week working on this course outside of class!* Of course, some weeks you may spend more than 9 hours on this class, while others you may spend less.

#### IS THIS THE RIGHT MATH COURSE FOR YOU?

This class is intended for any who want to take it, are ready and willing to put some time and thought into the course, and have had a solid grounding in both Differential and Integral Calculus. Calculus BC (even some Calculus AB courses) can be sufficient preparation.

#### READING ASSIGNMENTS:

I will put a copy of each reading assignment on the web – follow links from the course website. Each assignment will indicate what you are to be reading that day, and will also have questions that you are to answer by e-mail. The purpose of these assignments is two-fold: to help you continue to develop your mathematical reading skills, and to give you credit for your efforts. You are not graded on the correctness of your responses, only on whether or not you do the assignment before

class. For more details, see *Guidelines for Submitting Reading Assignments* and *Suggestions for Reading a Math Book* on the course web page.

Reading assignments that are late but received before class will receive half-credit  
Reading assignments received after class will receive no credit

#### PROBLEM SETS:

Mathematics in the real world is usually done as a combination of group and individual efforts. Thus it is important that you are able both to work on your own and to work with others. For that reason, your weekly problem sets will alternate between being done individually and in groups of 2 (3, if necessary; *never* 4). You should switch partner(s) with every problem set.

Problem sets will be due every Friday at the beginning of class. While they are only due once a week, they represent a week's worth of learning, and you should therefore work on them throughout the week.

The assignments will be posted on the web, and can be found through links toward the bottom of the course web page. Consult the **Guidelines for Homework Presentation** on the course web page for information on how your problem sets should look.

Late problem sets will have points deducted!

If turned in on Friday after class but before 3:30 (when I leave), and if everybody involved was in class, then I will deduct 0-25% depending on the situation. I will deduct 50% from problem sets turned in after 3:30 Friday and before 9:30 am Monday. I will not accept any problem sets after 9:30 am of the first Monday after the problem set is due, except in the most extreme circumstances. (Whenever you do find yourself in unusual circumstances, please do let me know – at the very least, I can make a note on the grade sheet reminding me to take your situation into account in the end.)

#### PROJECT:

One individual project will be due this term; you will choose between two options – reading a book aimed at a general audience on math or on a mathematician and writing a report on it, *or* creating a picture using only Maple and functions. This project will be due Friday 4/30/10 at 3:30 pm.

Late projects will be accepted, but 20% will be deducted each day!

#### EXAMS:

During the semester, I will give two midterm exams to make sure that you are putting together the concepts and skills we have covered; the term will culminate in a cumulative final. Each of these exams will combine an in-class portion with a take-home portion. The reason for breaking the exam up in this way is that there are certain skills you need to master well enough to do them fairly quickly (hence the in-class portion) but you also need to be able to do problems that require a variety of different concepts, or simply require enough calculation or work on Maple, that it would be unreasonable for me to ask you to get such a problem done during an in-class exam. Please do not think of these two portions as two different exams – I will try to keep the lengths of both portions reasonable!

The dates of all of these exams are fairly firmly established, and are listed on the syllabus.

**Notify me in advance** if you must miss any of the in-class exams. If your reason for missing is acceptable, we will arrange that you take the exam **early**. If you miss an exam without notifying me in advance, I reserve the right not to give you a make-up exam. I will not give any student more than one make-up exam during the semester.

#### ATTENDANCE:

Clearly, missing class is not a wise idea. If you **do** miss class, you are responsible for the material that was covered. *Warning:* – I can only keep one day’s worth of events in my head and may not remember something important, so ask your friends as well as me.

#### EVALUATION

I expect to use the weights below, although I reserve the right to change my mind if the semester does not go as expected.

Reading Assignments	5%	Two Midterm Exams	35%
Individual Project	10%	Comprehensive Final Exam	25%
Problem Sets	25%		

If you question the fairness of any grade, please feel free to bring it to me, but please do so **within a week** of receiving it.

#### HONOR CODE

I expect you to abide by the Honor Code. *Remember: If you see a violation of the Honor Code occurring, you are bound by the Honor Code to report it.*

As part of the honor code, you are required to write

I have abided by the Wheaton College Honor Code in this work

followed by your signature, on all written assignments. Every time you do, you should be pondering the question “how exactly does the honor code apply to *this* assignment, and did I *really* abide by it?” If, upon consideration, you do not feel you can truthfully write and sign the pledge, please come speak to me immediately!

So, specifically, how does the Honor Code apply in this class?

**For all assignments:** You may discuss the work with classmates, and you may use references that help you figure out how to do a problem on your own, but you may not use any references (people, other people’s projects or assignments, books, the web) which either give you the answer or lead you directly to the solution. When you do use references (whether people or other sources, as described above), you *must* cite them.

**Reading assignments:** You may discuss the questions with your classmates, but you must enter the responses yourself, in your own words.

**Homework:**

- For the individual problem sets, you must write the results on your own, in your own words. As in any other class, *in your own words* does *not* mean taking some one else's assignment and just making small changes.
- For the group problem sets,
  - You may not divide the work!
  - you must make every effort to meet with your group at all meetings. You may not purposely exclude any member from a meeting.
  - you must make every effort to participate and aid in finding the solutions. If you don't understand what someone else is saying, you must ask them to explain it. If someone asks you to explain your ideas, you must take the time to explain it. In the end, you must understand all the work that is being submitted under your name.
  - after your group has jointly figured out every problem, one person will be responsible for recopying your work. This primary author must change from week to week.
  - when it comes time to divide up the group's points, do not give, or take, credit that is not due.

**Projects:** The work you do, and the work you turn in to me, must all be your own work. If you are reading a book, it must be a book you have *not* read before.

**In-Class Exams:** You may not use any notes, books, or colleagues as reference during the exams, except for a "cheat sheet" *if* I decide to allow one. Of course, if I do allow one, you must conform to my stated rules. During the exam, you may not look at anybody's exam or "cheat sheet" until after all exams have been returned. You may not use a calculator unless I specify that you may, and you may not use the graphing aspect of a calculator.

**Take-Home Exams:** You must follow whatever rules I state on the exam – if it is a closed-book exam, then of course you may not look at the textbook or your notes (or anybody else's). In any case, you may not discuss the exam in any way with anybody other than me. This not only includes specifically discussing problems, which is obviously taboo, but also simply commenting on whether a problem is hard (you can really affect somebody else's exam just by saying a problem is hard or easy). Also avoid discussing take-home exams with other faculty members!