Welcome to college. **You have a quiz this Thursday (August 25) in your Discussion section.**

**Add/Drop/Change of Section:** The TAs handle all ADDs and DROPs. No one else can sign add/drop slips.

**Philosophy:** I am teaching this course because I requested it. Teaching is a big part of who I am, so it is important to me that you find our time together worthwhile (and maybe even enjoyable!). A Calculus course is a serious endeavor, confronting some big ideas and powerful methods for describing and analyzing our world. I urge you to put in the effort needed to really master the material, and then have the satisfaction a person gets from learning, working, and growing stronger.

With 360 students, there is a wide range of background and ability. For some of you, this is supposed to be an easy ‘A’. Try to set yourself a goal that is worthy of your abilities: **mastery.** "Mastery" means knowing it all, and knowing it confidently. For some of you, passing the course will be a battle. I am willing to join you in that effort; if you have the appropriate background, and are willing to work. My hope is to teach you some math, not to find a way to wash you out.

Some of you care a lot about grades. This class is not curved. There is room for as many A's as are deserved.

This course assumes you have a decent algebra background, along with some work with trigonometric functions and exponential functions. That is a big assumption, so we will occasionally review some of the needed background. But you are the one responsible for making sure your background is solid. If there are areas of algebra, trig., etc. that you see coming up in the text (that's one of the reasons I try to give you a daily schedule of topics), you should pull out your old algebra text and/or go to the Math Lab to get some practice problems and help as needed.
Because I view the ideal goal for you to be "mastery", I will tend to pick exam questions that focus on the basics of the course, rather than the most complicated examples. (You will have a chance to chew on some of those in the homework.) At the same time, I also will tend to demand very good work on the exams. I plan to give very few, if any, final grades of "D": a student should either pass the course in a confident way, or take it again. Set yourself the goal of an "A". We all will be very happy if everyone in the class earns an "A".

Sometimes in high school, it was ok to learn half the material and bluff the rest. That is not the case in a college math course. Whether or not we cover some specific item in class, whether or not we work examples of every kind of problem in a chapter, you are responsible for every idea, technique, formula, method, approach, paradigm, and problem that is presented in lectures, discussions, or the text, unless the instructor specifically announces exceptions. I will try to tell you which text sections, which groups of problems, which pages, etc. are the most important and the most likely subjects for exams. But whenever you ask the question, "Do we need to know this?", the answer always is "YES", unless I specifically tell you otherwise.

Are you prepared for this course?
The prerequisite for this course is 22M:015 or equivalent background in algebra + trig. The prerequisite for M15 is M2, an algebra course that also includes log's and exponentials. (Remark on detailed background: exponential functions are more important than trig.) I realize some of you haven't studied one or another particular topic, and others have but things have vanished in the mists of summer. I think we can handle that. But you do need to be very solidly in control of the very basic ideas of algebra. You won't need the most difficult or complicated algebra topics you studied, but you do need to be able to do very basic math very easily. For example, you should be able to:

- Give the slope of the line $y=3x+4$ without hesitation, and graph the line (OK, it's August - so maybe you hesitate for a moment.)
- Solve the equation $5x - 6=23$ as quickly as takes to write the solution (as a fraction - don't worry about decimals, and don't run to take out your calculator).
- Combine the terms in $(3x + 4y) + (2x - y)$, as quickly as it takes to write out the expression.
- Multiply out $(x+y)^3$, in a few direct confident steps.
- Look with pity upon anyone who would say $\frac{1}{a+b} = \frac{1}{a} + \frac{1}{b}$.

You don't need to be a whiz at mental arithmetic, but you should be able to do very simple calculations. You are welcome to use a calculator for homework (which may involve messier calculations) or for entertainment. But you may not use calculators on quizzes or exams.

We begin the course with Section 1.3 and will go through Chapter 1 very quickly. In addition to whatever homework is assigned on Monday 8/22 and Wednesday 8/24, your quiz on Thursday 8/25 will also include problems such as Sec. 1.1 (page6).

Routines of the course We meet 3 times each week for "lecture", where I will introduce new material, teach basic concepts and methods, and work some practice problems. I enjoy interactive
teaching, and believe it is more effective than straight lecturing. So please ask (and expect to answer) questions.

You also meet two days each week with the TA for "Discussion". In the Discussion Sections, you will hand in homework, have a chance to discuss material from the lectures, text, and homework, and take a quiz each week (usually Thursday) based on the homework assignments.

Several times each week, you and your textbook (and maybe some others in the class with whom you form a study group) should meet. This is very important! There simply is not time in class to go over every single idea you need to learn, every kind of problem you need to be able to solve, etc. Typically, the problems I work out in lecture will be relatively easy ones, chosen to illustrate the basic ideas at hand. The text is where you will find more complicated examples worked out, and more discussion of the various ideas and methods. This is one of the big differences between high school and college: many students tell me they did well in high school without reading the math textbooks. The teachers explained everything they needed to know, and they just went from class to homework and exams, without ever having to read the text. In college, you might sometimes be able to get C's and D's that way, but you won't get A's and B's. The text is your private tutor, always available and paid for ahead of time.

Office hours will be set shortly after semester begins; meanwhile please see me after or before class to make an appointment if needed. (Special note: M16 meets in two sections back-to-back. I will try to come early to the 1:30 class and stay late after the 2:30 class; one of our TAs may be available a few minutes after the 1:30 class for quick questions.)

Text: Mathematics for the Biological Sciences (Arya & Lardner) We aim to cover almost all parts of Chapters 1, 2, 3, 4, 5, 6, half of 7, and parts of 9 and 10. That represents an introduction to derivatives, a shorter introduction to integrals, a very short introduction to multivariable calculus, and a tiny introduction to differential equations. The general rhythm is one day per text section.

My goal is to help you learn some important mathematics, and gain more confidence in using mathematics in "real world" situations, especially in biological science areas. We (you and your teachers) will focus most of our time and effort on the math, with "applications" of a training nature, that is simplified versions of situations you may actually encounter in classes, labs, readings, etc.

Pace of the course:
This course has a pretty fast pace. Material usually builds on the material previously studied, so you can't afford to fall behind. Also Homework usually gets assigned each day. If you miss a class, get the notes from another student. Also check our course web page for assignments, comments, and updates. I expect to have a system of posting notes from each days class, but the notes won't get posted immediately, and will lack the personal insights you can get from discussing the material with a friend ("...and when he wrote this example, he said that it was his favorite topic and bound to be on the next exam..."). So I strongly recommend that you have some buddies" in the class.

Exams and Homework: There will be two evening midterm exams and a Final.
NOTE: Class will not meet on Monday Sept. 5 and Wednesday Oct. 5.

When I assign homework, I will include the due-date to hand it in; usually the following Thursday Discussion meeting (so HW assigned on Fri., Mon., Wed. are due Thurs.). In addition, you should expect a quiz each Thursday based on the current homework. You will receive 10 points for the work handed in ("Did the student work the problems?") and 20 points for the quiz. Your Discussion Section grade (see below for how that counts towards your course grade) will be based primarily on these scores, as a percent: 90% = A, 80% = B, 70% = C, 60% = D, 50% or below = F.

The course is not "curved"; on each exam, you receive a letter grade (usually expressed as a number, e.g. 4.3 = A+, 2.7 = B-). In addition, you will receive a Discussion Section grade based on your work there. These all will be averaged to determine your final grade.

Occasionally there are special circumstances that justify giving a student a higher grade than the strict average. For example: (a) a student who did strong work in all aspects of the course except for one bad test; (b) a student whose work showed a clear pattern of improvement through the semester; or (c) a student whose "average" was near the border between two final grades and whose class participation was strong. If your "official" average is 3.49, I don't want to say mechanically, "Too bad, that's a B+"; you may get the B+, but it will be because there is no exceptional circumstance evident in your work to deserve the boost. On the other hand, if your "official" average is 3.51, then you get the A- for sure.

There is no exact attendance requirement, but we try to pay attention to who is attending regularly. A student who misses a lot of classes is not likely to receive any special consideration (previous paragraph) in computing the final grade. "Class participation" is a combination of being in class and contributing when you're there. Given the size of our lecture classes, this applies primarily to Discussions.

Your average will be computed with the following weights:

<table>
<thead>
<tr>
<th>Course</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Midterm Exam I</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam II</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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<tr>
<td>Discussion Section grade</td>
<td>30%</td>
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Rules for exams and homework: All exams and quizzes are "closed book". You should have no books or papers of your own, also no music, phones, or other electronic devices, available during an exam. **Calculators will not be permitted for exams or quizzes.** Also you must show work on homework and quizzes; simply listing answers will receive no credit. Exams will be multiple choice.

Don't worry about the calculators. We will write tests that do not require messy arithmetic. In particular, do leave your answers as fractions, square roots, etc. Do not waste time converting to 8 place decimals - that is not our agenda here.
If you have an exam conflict, notify me well ahead of the exam date so we can decide on appropriate arrangements. Our Tuesday evening exam time is published in the Schedule of Courses; it has the same priority as if it were a regularly scheduled class at that time.

If you miss a test or assignment, please discuss the situation with me (for exams) or your TA (for HW/quizzes) as soon possible, to determine if the missed work is "excused", and, if so, to arrange how/when to make it up. There will be no make-up opportunities for un-excused missed work. To request that missed work be excused, you need to provide a written statement of the reason for your missed work, including the name, address, and phone number of a health professional, minister, or other appropriate individual who can verify your circumstances. Religious holiday, significant illness, personal emergency, and official University activities are the usual reasons for excusing missed work. Given the size of our class, we expect to be careful in evaluating requests.

It often helps to study with other students. But ultimately, the work you hand in must be your own.
Any plagiarism, or other forms of academic cheating, on assignments or tests, will be dealt with as harshly as University rules permit.

Special notes: (1) This Course Description represents my current expectations, and is subject to changes that may be announced in class through the semester. (2) If you wish to contact the Mathematics Department Chair, his office is in 14MLH; to make an appointment, call 335-0708 or see the Department Secretary in 14C MLH. (3) Please inform me and your TA (each separately) within the first week of class if you have a disability that requires special arrangements. Students needing special accommodations should have documentation from the Student Disability Services office. (4) This course is given in the College of Liberal Arts and Sciences; University policies for students enrolled in one college taking courses offered in another may be found at http://www.uiowa.edu/~provost/deos/crossenroll.doc.

My own expectation in this course is that we will deal with each other in a responsible, professional, honorable way, and that we will enjoy working together. I welcome your comments, good or bad, about any aspect of the course, any time during the semester, and in the Student Evaluation forms used at the end.