MAT161 Syllabus Fall 2007

Basic Course Information

**Instructor:** Robin Sanders  
**Office:** BI 317  
**Phone:** x5621  
**E-mail:** sanders@math.buffalostate.edu  
**Office Hours:** Monday: 1:00–2:30  
Tuesday: 11:00-12:20 & 1:40–3:00  
Wednesday: 1:00–2:30  
Friday: 1:00–2:00  
and by appointment

**Text:** *Calculus, 2nd edition from Graphical, Numerical, and Symbolic Points of View, 2nd edition*, by Ostebee and Zorn  
**Note:** We are using Volume 1 which contains chapters 1–5. The text is also available (on-line) in an edition labeled *Single Variable*, which contains chapters 1–11 and weighs substantially more than the paperback Volume 1.

**Required supplies:**  
A box of colored pencils  
A small transparent ruler—6 inches is plenty  
A graphing calculator—either a TI-83/84  
One or two notebooks—spiral bound is fine  
Plenty of scrap paper

**Teaching Assistant:** Ed Fazekas  
**Note:** You need to bring your text colored pencils, ruler, calculator, and something to write on to class every day.

Course Co-requisite

MAT163 is a co-requisite for MAT161: Students enrolled in MAT161 are also supposed to be enrolled in a section of MAT163. MAT163 is a one-hour course designed to give students a more formal introduction in using appropriate calculator and computer technology for solving non-routine calculus problems. MAT161 and MAT163 are designed to be taken at the same time!

Since the two courses are co-requisites, I expect you to be enrolled in a section of MAT163 this spring. We will be using calculator (and some computer) technology throughout the semester. On take-home work and in problem solving sessions you will regularly be expected to use appropriate technology. I also reserve the right to put technology-dependent questions on the in-class tests and final exam.

In MAT161 I will NOT spend class time teaching you how to use the technology—that is covered in MAT163. *Students who insist on taking MAT161 without taking MAT163 are still responsible for using appropriate technology when working technology dependent problems.*
Course Content
We will cover Chapter 1–4 of the text. Certain sections will be omitted because of time and/or because they will be covered in MAT163—the one hour co-requisite course for MAT161.

Course Objectives
By the end of the semester you should be able to:

• explain the concept of rate of change and its fundamental relationship to real-world phenomena;
• analyze and compute limits graphically, symbolically, and numerically and use limit theory to solve problems and determine continuity and differentiability of functions;
• explain the concept of derivative as instantaneous rate of change graphically, numerically, and symbolically, and its relationship to average rate of change;
• compute derivatives of algebraic, trigonometric, exponential, and logarithmic functions using appropriate techniques of differentiation;
• analyze applied differentiation problems from related disciplines and describe results using appropriate mathematical language and notations;
• solve selected differential equations and related initial value problems with and without the use of technology;
• demonstrate ability to use technology to solve problems and as a tool to provide insight into significant concepts of calculus;
• demonstrate ability to use deductive reasoning and proof as tools to generate mathematical knowledge and provide insight into significant concepts of calculus; and
• solve problems from related disciplines individually and in small groups within a Socratic environment during weekly problem solving sessions.

Grades
Your final grade will be determined by adding together the scores you earn on all the course assignments and dividing your total by the total number of points for the entire semester. Conversion to letter grades will use these ranges:

<table>
<thead>
<tr>
<th>Final Percentage of Points</th>
<th>Letter Grade for Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>88–100%</td>
<td>A</td>
</tr>
<tr>
<td>75–84%</td>
<td>B</td>
</tr>
<tr>
<td>62–74%</td>
<td>C</td>
</tr>
<tr>
<td>50–61%</td>
<td>D</td>
</tr>
<tr>
<td>0–49%</td>
<td>E</td>
</tr>
</tbody>
</table>

I do not routinely assign plus/minus grades in my classes, but I reserve the right to use plus/minus grades for students who are clearly on the borderline between two letter grades.

Several types of assignments will be used throughout the semester. Each type of assignment is discussed in its own subsection.
Tests (400 points total)

Two 200-point tests will be given during the semester. The dates of the tests are:

- **Monday, February 25**
- **Monday, April 7**

Approximately one week before each test I will tell you exactly what sections the test will cover. You will be allowed to use a TI83/84 graphing calculator on the tests. You will also be allowed to bring in a one-page cheat sheet to each test. The cheat sheet must comply with the following rules:
  - It must be handwritten by you.
  - It must be on one normal (8 by 11 inch) sheet of paper.
  - You may write on both the front and back.
  - You must turn the cheat sheet in with the test.

I have allowed the use of cheat sheets for several years now. Some students find that the time they spend deciding what to put on the sheet and how to organize the sheet is a useful study device. Others do not. If you want to hand in an empty cheat sheet (i.e. not do this assignment), that’s fine with me.

Final Exam (300 points)

The final exam will be in the regular classroom at the time scheduled in the campus wide CEP-week schedule.

The final exam will be cumulative, but it will (slightly) overemphasize the material covered after the second in-class test.

The rules for the tests apply to the final exam too. You will need to write a new cheat sheet for the final exam—simply stapling your previous test cheat sheets together violates the one-page rule.

Problem Solving Sessions (approximately 300-350 points total)

Each week during the Problem Solving Sessions (PSS) you will work (in groups) on a small number of non-routine problems. Your group will turn in one copy of the work you completed in class; the recorder position in the group must rotate through all group members. In some weeks your group may not finish all the problems. In that case you and your partners are each (individually) responsible for writing up for the problems your group did not finish during the PSS. You will need to turn in your solutions at the next class meeting.

Most weeks you can expect the problem solving write-up to be worth about 24 points total.

Problem solving write-ups may be graded by either myself or Ed.

Daily Homework (approximately 200–300 points total)

On most class days I will end lecture with a list of problems from the book that I want you to do.

Homework will be collected two class days after it is assigned. At the beginning of the lecture (not problem solving session), I will ask you to turn in your work for 3 of the assigned problems. I will pick the problems randomly. (One of the selected exercises will come from the assigned Further Exercises section.)
You should work your homework in a separate section of your notebook for this class. You may work multiple homework problems on each page. If I ask you to turn in problems 5, 21, and 33, please rip out the page(s) that contain those three problems and turn them in.

On harder homework problems you should begin your work on scrap paper. After you have a good idea of what the solution to the problem is, then (and only then) copy the solution into your homework notebook.

Ed will grade the daily homework problems. Each homework problem will be graded on a three-point scale as follows:

3 points A correct solution or a solution that has has only a few “careless” errors.
2 points A partial solution or a solution with major mistakes, but which shows that you know how to start the problem.
1 point A solution that demonstrates some effort, but which is wildly inappropriate for the problem or shows that you really don’t know where to begin.
0 points A missing solution—you didn’t attempt to solve the problem.

Note that you will earn a 0 on a homework problem if all you have done is just recopy the problem (or part of the problem) into your notebook. There must be some work that is your own in order to earn 1 point.

Reading Assignment Questions (approximately 50–100 points total)

I will often (but not always) end lecture with a reading assignment as well as the daily homework. I expect you to make a serious attempt at reading the assignment on your own before the next class. When I’m organized I’ll pass out a reading question or two for you to complete and turn in at the beginning of the next lecture. Once I get the Angel site for the course up and running, I will use Angel to post one or two reading assignment questions for you to answer (in Angel) no later than 12:30AM of the next class day. In other words, if I make a reading assignment on Wednesday, you must answer the reading questions by 12:30AM FRIDAY. I reserve the right to distribute one or two reading questions at the beginning of the class period when I forget to give you the reading questions before hand.

The reading questions are short answer questions about the material contained in the reading assignment. I don’t expect fully correct answers, but I do expect answers with more quality and thought than a response that simply says, “I didn’t understand anything at all.” Each reading assignment question will be graded on a 2 point scale:

2 points An answer that demonstrates you have clearly spent some time digesting the material in the reading assignment. You might make some serious mistakes, but you know where you’re not sure about what you’re doing.
1 point An answer that demonstrates you may have read the assignment, but you did not get much out of it.
0 points A missing answer OR an answer that says something along the lines of “I did not understand anything in the assignment.”

The reading assignment questions may be graded by me.

Daily Attendance Points (approximately 50–55 points)

See the Attendance Policy section for details about Daily Attendance Points.
Attendance Policy

Attendance at the problem solving sessions is mandatory. If you are not at the problem solving session, you will not have the chance to work on the problem solving problems in class and this will make it much more difficult for you to complete the problem solving session write-ups.

Attendance for the 8:00 lectures is strongly encouraged. If you are not in class it will be much more difficult for you to make sense of the material you are studying this semester.

Each day I will take attendance by passing around a sign-in sheet. For each day you sign the roster sheet you will earn one daily attendance point. [If you sign the sheets for both lecture and the problem solving session on a Wednesday, you will earn two attendance points.]

Other Policies

Please abide by the following rules while in this class:

• *Turn your cell phone off*. Taking or making cell phone calls during class is simply RUDE to both me and your fellow classmates.

• *Be on time*. Wandering in 10 or 15 minutes late is better than not coming at all, but you won’t get as much out of the class if you’re not there for the full period. If you are late, try to come in quietly and sit down without disturbing your classmates.

• *Be prepared*. Please do the reading assignments as well as the homework assignments. If you’ve attempted to do the reading, you will have a better idea of what we’re discussing and what problems you have with the material.

• *Bring your homework to class*. I will collect all homework assignments, problem solving session write-ups, and projects at the beginning of class. Late work will not be accepted for daily homework and problem solving session write-ups. Late projects will be assessed a late penalty.