Calculus III
MATH 220-54

Spring 2005
Syllabus

Time: MF 12:30-1:20
TR 1:00-2:15

Classroom: HAI 15 on MF and ALT 223 on TR

Instructor: Dr. Dena Morton
Office: Hinkle 111
Phone: x3674
Office Hours:
- Mondays from 2:45-4:00
- Tuesdays from 11:30-12:30 and 2:30-3:00
- Thursdays from 11:30-12:30
and by appointment

e-mail: morton@xavier.edu

Note: this is the best way to reach me – I check my e-mail on a regular basis.

Web Page: http://cerebro.xu.edu/~morton/

Note: homework is posted daily. If you miss a class, go to the webpage to find the correct homework.

Prerequisites: Calculus I and Calculus II

Text: Multivariable Calculus from Graphical, Numerical and Symbolic Points of View, second edition, by Ostebee and Zorn. You will need to read each section briefly before it is covered in class and then in more detail after it is covered in class.

Purpose: Calculus was first discovered by mathematicians searching for the answers to two “basic” questions:
1. What is the slope of a tangent to a curve?
2. What is the area under a curve?

In Calculus I and II we explored these two questions in depth, but only in a two-dimensional setting. This semester we will continue our investigation of these questions, but now in a new setting incorporating three-dimensional curves and graphs. Additionally we will introduce and investigate vector calculus. (Sounds cool, eh?)

It is essential that you be conscientious about completing both the reading and the computation assignments on time, and at least attempt every assigned problem. Questions are welcome at any time during class. I encourage you to participate actively in class by asking questions and by answering questions posed by either myself or by other students.

Content: We will begin with an introduction to higher dimensional space and a review of parametrizations and polar coordinates. Then we will introduce vector-valued functions and vectors along with an exploration as to how vectors operate. Next we will develop the theory and technique needed for differentiation and integration of functions of more than one variable. Last, we will discuss two famous and important results in vector calculus: Green’s Theorem and Stoke’s Theorem.

Class Activities: Classes will consist of small group activities, discussion, individual activities, Maple labs, and lectures.

Homework: Homework will be assigned daily. Doing homework for this course is the best way for you to pinpoint difficulties. It is also a wonderful learning tool. I will take questions about the homework at the beginning of each class session.

Quizzes: Weekly quizzes will be given on Fridays. I will grade these on a 10-point scale. The lowest quiz score will be dropped, so makeup quizzes will not be given. Quizzes will not be given during exam weeks.

Exams: There will be four exams given throughout the semester, each consuming an entire class period. There will also be a comprehensive final exam. If you must miss an exam for religious or academic reasons, or in cases of illness or emergency, you must submit a written excuse. A makeup may be scheduled -- this will be decided on a case-by-case basis.
**MAPLE Labs:** The mathematics department has adopted the computer algebra system known as MAPLE. Throughout the semester we will take time to acquaint you with this system through the investigation of various calculus topics. There is a worksheet collection.

Early in the semester you will be paired with a lab partner. Work with MAPLE is intended to be joint work and both students are expected to participate to the best of their ability. In fact, you are encouraged to do homework together.

**Journals and reading the textbook:** When reading the textbook, try to answer the questions posted online to guide your understanding. Take notes in your journal so that you can discuss your thoughts, questions, and difficulties in class next time. From time to time during the semester I will be collecting the journals, in order to grade them for effort/completeness. But keep in mind that journals are meant to be the basis for discussion during the lecture in class (so don’t go overboard!).

**Grading:** Quizzes, journals and MAPLE labs constitute 15% of your final score. Each exam will be worth 15% of your final grade. The final exam is worth 25% of your grade.

Each exam, quiz, etc. will be curved separately and assigned a number grade between 0.0 (the lowest possible F) and 5.0 (the highest possible A). I will announce the cutoffs when returning the exam. If, for example, the cutoff for an A is 87 and the cutoff for a B is 71 and you get an 83, then the number grade corresponding to your 83 would be a 3.75 (B corresponds to 3.0 and you are 12/16=.75 of the way to the next cutoff). The homework and quizzes will be treated similarly. The total course grade may be curved further (that is, a 3.9 would result in an A or A- in the course), but the resulting curve will never lower your grade (that is, a 4.1 would always result in at least an A- in the course). +/- grades may be assigned in borderline cases. I reserve the right to assign a grade of “F” to any student who earns less than 50% on the final exam.

**Calculator:** (Required) TI-83 or TI-83 plus. Make sure to bring your calculator to class every day (calculators will be used on many quizzes and exams). You may not use a TI-84, a TI-89 or a TI-92.

**Important Dates:**

<table>
<thead>
<tr>
<th>Monday, Jan 17</th>
<th>MLK, Jr. day (no classes)</th>
<th>Monday, Mar. 21-Monday, Mar. 28</th>
<th>Spring Holiday (no classes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday, Jan 25</td>
<td>Exam I</td>
<td>Monday, Apr. 11</td>
<td>Last day to withdraw</td>
</tr>
<tr>
<td>Thursday, Feb. 10-Friday, Feb. 11</td>
<td>Winter Holiday (no classes)</td>
<td>Tuesday, Apr. 19</td>
<td>Exam IV (might be rescheduled)</td>
</tr>
<tr>
<td>Tuesday, Feb. 22</td>
<td>Exam II</td>
<td>Friday, Apr. 29</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>Tuesday, Mar. 15</td>
<td>Exam III</td>
<td>Monday, May 2 or</td>
<td>Final Exam (Exact date TBA later)</td>
</tr>
</tbody>
</table>

**Attendance:** Class attendance is crucial. Lectures include the introduction and explanation of new topics, explorations of graphing calculators, and solutions of calculus problems. Class notes are to be used in conjunction with the text, in order to elicit a fuller understanding of Calculus.

_Please be courteous and come to class on time!_

_University policies on attendance are stated on p.45 of the undergraduate catalog._

**Missed Classes:** If you must miss a class due to illness or an emergency, you must first get a copy of the notes from one of your classmates. (If you do not know anyone in the class, I will help you contact someone to get notes.) Review the missed notes, and write detailed questions as you are reading them. I will be happy to answer all of your questions (as many as you would like to ask!), but I cannot re-lecture for you. As noted above, quizzes cannot be made up.

**One Minute “Quiz”:** At the end of some class periods I will ask you to hand in a sheet of paper on which you have filled out the following:

1. What was the most important topic covered today? (That is, what was the main point?)
2. What was the most confusing idea that was covered today? (That is, which concepts did you find complex or hard to understand?)
3. Any questions or comments?
You need not sign your name unless you have a specific question that you want me to address to you. I will frequently respond to one-minute quizzes during the next class period.

**Group Work:** Working in a group can be beneficial for everyone involved, provided that you do not abuse the privilege. Make sure that everyone in your group is making a contribution. Do not copy answers from one another, as this will only backfire against you come test-time. Instead, let concepts gel after group discussion, and then write up the solutions by yourself.

**Academic Honesty:** You are expected to conduct yourself with integrity in this course. Cheating will be dealt with as harshly as University regulations permit; measures will be taken during exams to prevent cheating. Students are directed to p. 52 of the undergraduate bulletin for further information. Any talking between students during exams will be cause for an automatic "F" on the exam.

**Cell phones:** Please turn all cell phones off during class. Cell phones must be packed away during exams.

**How to Do Well in this Course:** Come to class! Come visit me during office hours! Read the text! Try the problems! Smile! Study hard! Read your class notes! Make sure you keep up with the material in class! Review your class notes! Don’t Panic! *Enjoy*! Most important of all, if you feel that you are falling behind, or that you do not understand a certain topic, or if you would just like to discuss a mathematical idea (or anything else), come to visit me in my office. That’s why I am here! ☺️