

COURSE INFORMATION SHEET

Math 241 (Calculus III) Sections E, Fall 2008 Professor A.J. Hildebrand

<http://www.math.uiuc.edu/~hildebr/241/>

Basic information

Lectures:

- EL1: MWF 8 am - 8:50 am, 180 Bevier Hall

Discussion sections:

- ED1: TR 8-9, 343 Altgeld (TA: Tsai)
- ED2: TR 8-9, 143 Henry (TA: Song)
- ED3: TR 9-10, 154 Henry (TA: Song)
- ED4: TR 9-10, 347 Altgeld (TA: Rettberg)
- ED5: TR 10-11, 441 Altgeld (TA: Rettberg)
- ED6: TR 10-11, 108 David Kinley Hall (TA: Tsai)

Instructor contact information: Prof. A.J. Hildebrand, email ajh@uiuc.edu, phone 244-7721, office 241 Illini Hall. I have official office hours MW 11:30-12:30 (in 241 Illini Hall), but I am usually free after the MWF lectures, so if you want to discuss something with me, just get a hold of me at the end of class in the Bevier Hall lecture room. Also, I read my email frequently, and you'll likely get a reply within a few hours. **If you do send me email, be sure to include "Math 241" in the subject line; otherwise your email might get trapped or delayed by spam filters, especially if sent from a non-uiuc account.**

TA contact information::

- Ryan Rettberg (Sections ED4, ED5), rrettbe2@math.uiuc.edu
- Shichang Song (Sections ED2, ED3), ssong8@uiuc.edu
- Chia-Yen Tsai (Sections ED1, ED6), ctsai6@uiuc.edu

The TAs will announce office hours and contact information during the first week of class.

Text: Smith/Minton, *Multivariable Calculus: Early Transcendental Functions*, Third Edition, ISBN 0-07-287029-X. We will cover Chapters 10–14. (Note that some of the other Math 241 sections use a different text. If you buy the book from one of the local bookstores, make sure to get the one listed under Section EL1 (or Section E).)

Alternate sources for the text: The bookstore price for the text is around \$120 new, and \$90 used. However, you can find better deals at online outlets such as <http://www.campusbooks.com>, <http://www.abebooks.com>, <http://www.addall.com>, <http://www.textbooksrus.com>, or the local, student-run, Illini Book Exchange, <http://www.illinibookexchange.com/>.

Note that there exist several different versions of the Smith/Minton text. The local bookstores carry the correct version, but if you buy the book from other sources, make sure that you get the version subtitled *Early Transcendental Functions* (the other one is subtitled *Late Transcendental Functions*), and the *Third Edition*. Also, make sure that the book is not the “Single Variable” version, but contains the “Multivariable” chapters (Chapters 10–15). (The complete Smith/Minton text, covering both Single Variable and Multivariable Calculus (*Calculus: Early Transcendental Functions*, ISBN 0-07-286953-4), would do as well. Our text, which covers only Multivariable Calculus, simply consists of the second half of the complete text, with identical page numbering. In fact, you might find better deals online on the complete text than the multivariable portion alone.)

About this course: This course (Math 241) is the third and final course in our standard three-semester calculus sequence. Whereas Calculus I (Math 220/221) and II (Math 231) develop a theory of functions of a single variable and derivatives and integrals of such functions, in Calculus III this theory is extended to functions involving several variables. This enables one, for example, to carry out calculus in 3-dimensional space (with the variables being the coordinates), and analyze the movement of projectiles in space, amongst many other applications.

Prerequisites: Math 220/221 and Math 231 are prerequisites for this course, and you should have either (1) taken these classes (or equivalent classes elsewhere—note that you must have earned college credit, not high school credit, for these classes), or (2) passed proficiency exams for these classes, or (3) received a score of at least 4 on the AP Calculus BC exam. During the first two weeks of the semester a form will be handed out where you will need to indicate which of these three qualifications (1)–(3) you have satisfied.

Course web page: The web page for this course is <http://www.math.uiuc.edu/~hildebr/241>. You should bookmark this page and visit it on a regular basis.

General course policies

Academic integrity: That means NO CHEATING. You can read the official University of Illinois policy on this matter in Article 1-401 of the University of Illinois Student Code, or simply follow the spirit of the no-nonsense “Aggie Code of Honor”, <http://student-rules.tamu.edu/aggiecode.htm>. To minimize temptations to cheat, exams will be supervised by experienced proctors, earphones, ipods, blackberries, and similar devices will not be allowed during exams, and student IDs may be checked.

Attendance: Attendance is not optional. Article 1-501 of the University of Illinois Student Code says, “regular class attendance is expected of all students at the University.” This applies to both the lectures and the discussions. While I don’t check attendance, if you do skip class, you do so at your own risk. Any quizzes or exams you miss as a result of skipping class will count as 0 points and may significantly hurt your grade. Oversleeping is not an excuse; if you come late to an exam or a quiz, you won’t get extra time to finish up. (If you feel that getting up for this class is too much of a hardship, switch to another section of Math 241. There are many sections to choose from, meeting at different times of the day, including one whose lectures are at 4 pm MWF!) (Note that an absence due to illness or other legitimate excuses, including religious observances, is, of course, a different matter; see below for policies that apply in those cases.)

Calculator policy: Calculators are not allowed in exams and quizzes; exam and quiz problems will be written such that they do not require a calculator; calculators would be a hindrance and distraction, and in most cases completely useless. You do not need to bring a calculator to the lecture or discussion sections. (I don’t carry a calculator with me either.)

Policy on missed exams or quizzes: I do not give make-up tests. Instead, if you miss a test, I will mark the test as “**excused**”, provided you have a valid excuse, documented with a Dean’s letter (see below). An “excused” grade on a quiz (or exam) simply means that your quiz (or exam) average will be based on the remaining quizzes (or exams), i.e., it will be as if the “excused” test had never taken place. An excused grade on a quiz won’t count against your drop score.

Documentation for an excused grade: To get a quiz or exam you missed counted as “excused”, requires a letter (“absence letter”) from the Dean of Student’s Office, located at 300 Student Services Building, 610 East John St., phone 217-333-0050. You’ll likely need to go there in person, explain your case, show any documentation you have (doctor’s notes, etc.), and ask to send an “absence letter” to your instructors. The Dean’s Office deals with these situations all the time, and they have form letters that they will send to instructors if they believe you have a valid excuse (e.g., illness, but not, for example, oversleeping). A major advantage of going through the Dean’s Office is that you can take care of any other missed classes at the same time by having letters sent to all of your instructors.

Requesting an excused grade: To request an excused grade for a quiz that you missed, get in touch with your discussion section leader (TA), and provide him/her with appropriate documentation (i.e., a Dean’s letter). For an excused grade on an exam, get in touch with me. **All requests for an excused grade must be made within one week of the test.**

Policy on grading appeals: We try to be as fair as possible in grading quizzes and exams, but oversights and grading mistakes occasionally happen. If you feel that there was such a mistake, talk to your TA first. If it is a clear-cut case, he/she will cheerfully take care of it; otherwise, they might refer you to me. **All grading appeals must be made within one week of the date on which the test was returned.**

Grading policies

Midterm Exams: There will be three Midterm Exams, given during the regular lecture hour, and spaced out evenly during the semester. The first midterm will be in late September. I will poll

the class before deciding on precise dates, and I will post detailed exam syllabi, practice exams, and a study guide, about two weeks before each exam date.

Final Exam: The Final Exam will cover material roughly equivalent to two Midterm Exams, and will be cumulative. It will take place **FRIDAY, DECEMBER 12, 8 am – 11 am**, the slot assigned for this class according to the Fall 2008 Final Exam schedule. (There is no conflict or combined final for this class.)

Quizzes: Quizzes will be given about once a week, during the discussion sections. The specific dates (Tuesday or Thursday) may vary, depending on the amount of material covered in the lectures and other factors such as upcoming exams, holidays, etc. I will announce upcoming quizzes in the lectures. The quiz problems will be of the “quickie” variety, and are aimed at testing your knowledge of the concepts, definitions, and formulas that have come up in the past few class hours. If you attend the lectures and discussion sections and keep up with homework and reading assignments, you should have no problems with the quizzes.

Homework/Reading: Each lecture hour I will indicate the corresponding sections from the text that you should read, and assign practice problems from these sections. While these problems will not be collected or graded, they help you prepare for quizzes and exams, so it is in your own interest to take these assignments seriously. I will provide solutions a few days after each assignment.

Curving: Exams and quizzes will be graded “on a curve”; the curve will be a function of the difficulty of the test and the overall performance of the class and will be announced after grading is complete. The curve will usually be more generous than the standard curve (with 90/80/70/60 percent as cutoffs for A/B/C/D), and will never be less favorable than the standard curve. Thus, for example, an 80 percent raw score on a test is guaranteed to be worth at least a B- (the lowest B grade on the standard 90/80/70/60 curve), but it may convert to a B, or even a B+, as a result of curving. Note that the curving is done on each grade component (i.e., each test) individually; there will be no additional “global” curving at the end of the semester.

Drop scores: The lowest quiz score will be dropped at the end of the semester. Note, however, that no exam scores are dropped; all three midterm exams count in full.

Computation of course grade: The course grade will be determined by averaging your grades on Quizzes, Midterm Exams, and the Final, with the following weights: 1/6 Quizzes; 1/2 Midterm Exams (1/6 per exam); 1/3 Final Exam.

Viewing your scores: All scoring will be done by a computer program, and you will be able to access your accumulated scores and see your current grade at any time. The grading program we will be using is **not** the Campus Grade Book, but a program developed specifically for mathematics classes. Detailed instructions on how to access your grades will be given later.

How to succeed in this class

Attend class, both the lectures and the discussions: I take lecturing seriously, and I put considerable thought and effort into preparing the lectures. The lectures and the text complement, rather than duplicate, each other; reading the text is no substitute for attending the lectures. Instead of simply lecturing straight from the Smith/Minton text, I try to put my own spin on the material, focusing on topics that I consider more important, or concepts that are more difficult to understand and which the book doesn't explain very well, while leaving more routine material for you to read up on your own. I also try to put the material into a broader context and emphasize general ideas and the “big picture”. In preparing my lectures, I frequently consult other texts in order to find the best way of presenting a particular topic.

Read the text: Just as studying from the text is no substitute for attending the lectures, going solely by the lectures is not sufficient. For one thing, there is not enough lecture time to cover every topic in our syllabus in detail during the lectures, without sacrificing depth and rushing through the material. Thus, I will usually pick and choose some key topics, discussing those in class in some depth, while leaving more routine material, and additional examples, for you to read up on. Also, the examples I choose for the class presentation are usually different from those in the book; thus, studying the book examples will provide you with additional illustrations of the topics covered. (The lecture summaries on the course webpage will have specific guides as to what you should read up on your own.)

Last, but not least, the authors have done a fantastic job in presenting the material in an attractive, easy-on-the-reader manner, illustrated with many beautiful computer-generated graphics (which would be impossible to reproduce on a blackboard), and interspersed with fascinating real-world applications and sidebars titled “Beyond Formulas” and “Today in Mathematics”. For example, Chapter 10 starts out with a discussion of NASCAR race tracks, Chapter 11 talks about the home run records of Barry Bonds and Hank Aaron, and in Chapter 12 the design of the Prince Tennis Racket is discussed. While such things aren't exam material, I hope that they will entice you to read on and give you an appreciation of the usefulness of the theory you learn in this class.

Do the homework: The daily homework assignments are an essential part of this course. You should take it seriously and do the problems as they are given out. While the homework will not be collected (for logistical reasons), if you neglect the homework, you will likely be in trouble during quizzes and exams.

Enjoy: Having a positive attitude goes a long way. Multivariable calculus has a wide range of fascinating “real world” applications, from biology and chemistry to economics, engineering, physics, sports, entertainment (!) and, of course, mathematics—just take a look at the “Applications Index” in the Smith/Minton text, pages xxx-xxxi. Keep this in mind if things seem a bit dry on occasion. While in this class we focus on the mathematical side of things, you will likely encounter many application of calculus in other classes, and the concepts and techniques that you learn here will be essential when you get to such applications. Even on the purely mathematical side, there are some really cool applications that I hope you will enjoy and appreciate as much as I did when I came across them!