

Syllabus for Math 210

Calculus I Winter 2009

Preliminary Version 09 Jan 2009

Class Information

- Class webpage: <http://erichamilton.net>
 - Meeting times: Lecture: MTuThF 0800-0850, KSC 110
 - Lab: F 0900-0950. KSC 130
 - Required Texts: *Calculus: Concepts and Contexts (Third Edition)*, by J. Stewart
 - *Student Solutions Manual*, by J. Cole
 - *Optional Text: Study Guide*, by R. Burton and D. Garity
 - *Optional Calculator*: TI-89 or TI-92 (available at bookstore) or other comparable calculator (if you already have a calculator, see me to check if it is comparable)
- Prerequisites: 600+ on SAT Math -OR- 27+ on ACT Math -OR- "C-" in Math 103/104

Instructor Information

- Instructors: Brian Fisher and Eric Hamilton
- Email: brian.fisher@pepperdine.edu, eric.hamilton@pepperdine.edu

Goals in this Course¹

Calculus (Latin for "a small stone used for counting") is a branch of mathematics that includes the study of limits, derivatives, integrals and infinite series. Most basically, calculus is the study of change, in the same way that geometry is the study of space. Calculus has widespread applications in science and engineering and is used to solve problems for which algebra alone is insufficient. Calculus builds on algebra, trigonometry, and analytic geometry and includes two major branches, differential calculus and integral calculus, which are related by the fundamental theorem of calculus. This course is focused mostly on differential calculus, but we also get a brief introduction to integral calculus. In addition to learning about a variety of specific topics related to differential calculus, there are a number of things this course is designed to help you to do:

- Develop your ability to think clearly, logically and abstractly.
- Learn to be more careful, focused and persistent.
- Learn to be more resourceful and creative in finding ways to find solutions to problems.

¹ Many thanks to Dr David Thompson for the narrative template on which this syllabus is based.

What you can expect from your professors

1. Above all, you can expect we will care about and be loyal to you, both as our students and simply as people. You can expect us to be passionate about what we are teaching and what you are learning, thoughtful in the homework and exam problems, and fair in grading.
2. We will be prepared to present and discuss the concepts being discussed in a concise, clear, enthusiastic and helpful way.
3. We will expect the best from you both academically and personally.
4. We will not be too harsh in the problems assigned or in grading, nor too easy, as this will lead to lower standards of excellence.
5. We will respect the fact that you have other classes, as well as a life, outside of this class. We will begin class on time, end class on time, and assign work that should not take you more than the standard two to three hours per hour of time in class (so around ten hours per week).
6. We will strive to be as accessible to you as possible through office, instant messaging and email.

What we expect from you

1. Above all, you will not settle for mediocrity—you will expect excellence from yourself. In particular, you will expect from yourself that (1) you will understand (perhaps not perfectly, but as well as you are able) every idea discussed in class and in the text, and (2) you will find a way to solve every homework problem assigned. It is OK (it is expected!) to struggle and sometimes fail—it is not OK to not try. Remember that success consists of getting up just one more time than you fall down.
2. You will be to class every day, and you will be on time, as a matter of respect to me and your fellow students. Of course there may be exceptions (e.g. due to sickness or another class you are attending that lets you out late) a few times during the semester, but these will be the exception rather than the norm.
3. You will come to class ready to learn.
4. You will allow me, like a good coach, to push you and stretch you and help you to learn and grow.
5. You will complete and turn in every homework assignment.

6. You will be willing to spend the time outside of class that will allow you to really understand and enjoy the ideas we discuss in this class (the rule of thumb for college courses is that for each hour in class, students should plan to spend at least two hours studying and working outside of class).

7. If you have questions, you will not be too afraid or apathetic to ask.

8. Cheating will not be tolerated—it is not fair to the other students, not to mention simply being wrong. Please don't ever do anything in this class or in any other activity in life that will lower your own standards of what is right.

Class In a typical class meeting:

- There may be a short quiz, whose problems will come from the textbook examples worked in the section that we started discussing the previous day.
- Students will work several more problems from that section.
- We will begin discussing the ideas from the next section, including a short lecture.

In short, we'll spend parts of two days (the second half of one day, plus the first half of the following day) on each section. You'll get used to the routine quite quickly.

Reading

As you already know, reading a math textbook is different from reading most other books. In my own experience, it usually requires two or three readings through a section to really grasp the material. Fortunately, each section is usually only a few pages long, so that reading it two or three times isn't excessively difficult. One approach to reading math is this: ☐

- Read through the section to try to get a basic grasp of the ideas and concepts of the section, and don't worry yet about understanding all of the details. ☐
- Read a second time through the section, and this time try (expect from yourself!) to understand the details and examples. ☐
- Finally, in doing the homework, read through the section again (or the part relating to the problem), including making sure you thoroughly understand the example(s) related to the homework problem you are doing.

If you really want to do things the most effective way, read the section before coming to class.

Homework ☐ There are two main goals for every student in any course: (1) learn and understand the material being taught, and (2) get a good grade. Fortunately, if you do the first then the second will usually happen automatically. Homework is really where you accomplish both goals: it is by doing the homework and understanding what you are doing that you really

learn the ideas, and consequently you will be prepared to take and do well on the exams, which will really determine your grade the course. Homework is worth 20% of your grade. Most of the homework problems can be done with just paper and pencil, but there will occasionally be problems that will require the use of the computer. I will give you more information about using the computer when the time comes. I have assigned only even problems to turn in. For your own practice, prior to working the assigned even problems, you should work odd problems that are similar to the even ones assigned. All odd problems have detailed solutions in the Student Solutions Manual. Since one of the best ways to learn an idea is discuss it with or explain it to someone else (this is why math teachers sometimes seem so smart...they've had to teach the ideas!), you are encouraged to work with other students in doing the homework. Of course the homework turned in must represent your own thinking and your own work. Remember that homework is worth relatively little of your grade (only 20%), but doing it yourself will be what helps you really learn the material so that you can do well on the exams, which are what mostly determine your grade.

- On each homework assignment, be sure to include:

Name

Math 210

Section number

Assignment section

Here are some things to keep in mind when doing your homework (they may seem obvious, but unfortunately they are not always done):

- Write neatly—if the grader can't read your work then he/she can't give you credit for it.
- Don't try to squeeze your work into as little space as possible—it's more difficult for you to write and more difficult for the grader to read. Also, leave space between problems. Along this same thought, it is much easier for the reviewer to grade if you only write on the front side of each sheet.
- Circle your answer.
- In this class, we will have additional instructions for self-grading your work and for submitting it electronically.

Each assignment will be worth 20 points: 10 for the carefully graded problems (5 problems @ 2 points each), and then 10 points for the other non-graded problems (or some portion of 10 points, depending on how many you did). To make grading easier for the grader, you must staple your homework (top left corner, of course). Folding and/or tearing the corners of the papers together is not adequate. To encourage you to do this, you will receive 1 point off your assignment if it is not stapled. If you tend to do homework the morning before it is due, just buy

yourself a miniature stapler (and then maybe you can make some extra money by charging other students who don't have a stapler to staple their homework ☺). We will post the solutions online after homework has been turned in. ☐ Homework turned in up to one day late will receive half credit. Homework will not be accepted more than one day late. HW is late if not submitted to me at beginning of class.

Daily Quizzes ☐ At the beginning of most classes, there will be a short quiz that will consist of one or more problems taken from the Examples of the section that we began covering in the previous class. ☐ These quizzes will be closed book with no notes. ☐ After each quiz, we will have one or more students present their solutions to the class.

Midterm and Final Exams ☐ There will be a midterm exam following each chapter we cover.

☐ The final exam is comprehensive (it will test everything that we cover this semester). It will be given in the classroom during its regularly scheduled time of Monday, December 8, 7:30 – 10:00 a.m. for Section 1, and 1:30 – 4:00 p.m. for Section 2. ☐ Exam questions will often be similar to those in the homework, as well as the un assigned odd homework problems, so working on and understanding those problems is a good way to prepare for exams. ☐ You may use one sheet of notes for each exam. ☐ Midterms are worth 50% of your grade—each of the four Midterms is worth 12½% (one eighth) of your grade. The final exam is worth 30% of your grade. If you score higher on your Final than on any of your midterms, then your Final Exam score will also count in place of your *lowest* midterm. ☐ In general, there is no make-up for missed midterms. If you miss a midterm, your final score will count in place of the missed midterm. There is no make-up for missing the final, and you must take it during the normally scheduled time.

Grading

Your grade will be calculated based on the following weighting of scores: Homework 20 % Midterm exam 1 12½ % Midterm exam 2 12½ % Midterm exam 3 12½ % Midterm exam 4 12½ % Final exam 30 % As mentioned above, if you score higher on the final exam than on either of your midterms, then your final exam will count in place of the lowest midterm. The “official” grade breakdown will be as follows: A A- B+ B B- C+ C C- D+ D D- F 100% 93% 90% 87% 83% 80% 77% 73% 70% 67% 63% 60% 0% we say the breakdown above is “official” (i.e., in quotes) because the above chart gives the guaranteed *minimum* grade that you will receive for a given total score for the class. We don't necessarily curve grades for the class, but if needed, we will curve in order to bring grades up. For example, if no one in the class had a total score above 90% (say, if the final exam turned out to be more difficult than we had expected), then we would lower the cutoff for an A so that at least some of the class would receive an A (unless nobody really deserved an A, which is unlikely). Any curving that is done will be done at the end of the semester—I don't curve individual exams or other parts of the course.

Disabilities Any student with a documented disability (physical, learning, or psychological) needing academic accommodations should contact the Disability Services Office (Tyler Campus Center 264, ext. 6500) as early in the semester as possible. All discussions will remain confidential. Please visit <http://www.pepperdine.edu/disabilityservices> for additional information.

Other ☐ With anything you do in life, it's better to spend a little more time than you think you should or need to, rather than spending a little less time. This is certainly the case with a math class. Spending that little bit of extra time can make a huge difference in your success in and your enjoyment of this class. The rule of thumb is generally that for each hour in class, you should spend 2 – 3 hours outside of class. Since this is a 4-unit course, you should plan 8 – 12 hours outside of class per week. ☐ Please drop by for a few minutes if you ever want to discuss this course, school in general, or just life. We hope that you find this class is interesting, worthwhile, applicable, challenging, doable and fun!