

104. CALCULUS I (In-class, Active Learning). *Spring 2015 Syllabus*

SUBJECT TO SOME CHANGES

Professor: Robert Strain (strain at math DOT upenn DOT edu)

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Course Web Page: <http://www.math.upenn.edu/~strain/15ma104a/>

Class schedule: Tues and Thurs @ 3:00 - 4:30PM in DRLB 3N1H.

First class, last class: January 15, April 28.

Active Learning: The underlying concept of Active in-class Learning is that students learn and retain knowledge best when they discover for themselves and teach to their peers. In this direction you, as students, are responsible for reading the textbook and/or watching lectures online, and working through problems before class. Specific instructions about how to prepare for each class will be given in the homework, and we may experiment a bit to find out what works best for you and the class. During class time you will work in groups on problems which will be part of your written homework assignment. The experience of teaching the material to yourself can be an overwhelming one at first, but it is extremely valuable. You will develop the skills to learn independently and you will master the material on a deeper level than you would with a lecture course.

Textbook: Thomas' Calculus Early Transcendentals Custom Edition for the University of Pennsylvania Pearson 2014 *with MyMathLab access code.* (Godzilla is on the cover of the correct edition.) Please double check that your textbook comes with an access code for My Math Lab, or you will need to buy an access code (one place is at the book store).

Brief course description: Brief review of High School calculus, applications of integrals, transcendental functions, methods of integration, integration applications, sequences, infinite series, Taylor's theorem. Use of symbolic manipulation and graphics software in calculus. For further info see: <http://www.math.upenn.edu/ugrad/calc/m104/syllabi/math104syllabus.pdf>

Prerequisites: Math 103, or high school calculus covering differentiation and some integration, up to u-substitution.

Student responsibilities

- **Get course materials:** textbook including access to MyMathLab.
- **Attendance/Participation:** show up and participate each day.
- **Reading:** complete any assigned reading and lecture viewing *before* class.
- **Online Homework:** complete all assigned homework to the best of your ability.
- **Worksheets:** complete and correct all in-class worksheets and bring to next class unless explicitly told not to; this means you may need to get help from one of the designated sources. Please consult the calculus help section below.

This is an **Active Learning** class. Come to class ready to participate and plan on spending the class time working in groups on worksheets containing a mixture of skills problems and applications.

Do not bring a calculator: Calculators are not allowed on worksheets or exams.

Course goals

1. Ability to solve problems of the type in the textbook
2. Sufficient understanding to solve problems not exactly of these types

3. Ability to make use of this mathematics in applications
4. Ability to verbalize, communicate and explain
5. Long-term retention of the material

Why use the active learning format? Faculty in SEAS, Wharton, Biology, Economics, etc. have told the Math Department that students passing 104 sometimes cannot do the most basic things. Either they have forgotten the math, never learned it, cannot recognize it out of context, or cannot handle small variations in the way it is presented. The active learning format mitigates these problems: it has been shown to increase retention of knowledge; more teacher-student interaction ensures no knowledge gaps; worksheets concentrate on applications; we teach how to tackle unfamiliar problems by guiding students through longer problems.

Calculus help

If you are having difficulties with the material, **DO NOT WAIT** until you get a low score on an exam or you receive a Course Problem Notice from me. Please seek help **IMMEDIATELY** by

- Coming to my office hours
- Going to your course assistant's office hours
- Going to the Math 104 night review sessions on Sundays as well as the general calculus Math/Maple Center. Times and locations are at <http://hans.math.upenn.edu/ugrad/calc/help/schedule.html>. Online help is also available (found by following that link).
- Looking online at <http://hans.math.upenn.edu/ugrad/calc/help/help.html> for even more resources and suggestions.

Calculus start-up program

A bit rusty on your calculus skills? The Calculus Start-up Program is a set of review sessions designed to give you a refresher. Times and locations can be found at <http://www.vpul.upenn.edu/tutoring/calculusstartup.php>.

Calculus videos

A set of video lectures covering the same material we will be going through can be found at <http://www.math.upenn.edu/ugrad/calculus-videos/pennmathvideos.html>. Adrian Banner's videos associated to *The Calculus Lifesaver* can be found on YouTube or directly from the Princeton University Press site <http://press.princeton.edu/video/banner/>. More video and study resources will be posted on our course website.

Some Additional Online Resources:

Math Dept 104: <http://www.math.upenn.edu/ugrad/calc/m104/>

Calculus Help: <http://www.math.upenn.edu/ugrad/calc/help/help.html>

Math Undergrad: <http://www.math.upenn.edu/ugrad/Undergrad.html>

Homework: Weekly, posted on the courses Canvas website. Homework will be assigned on Wednesdays, and it will be due the following Wednesday at the start of your recitation section. You will be allowed one week to complete each assignment. Collaboration between students is encouraged, but you must write your own solutions, understand them and give credit to your collaborators. (To be precise, put a list of the students with whom you collaborated on your homework.)

Late Homework: *Late homework will not be accepted. And your lowest homework score will be dropped. We can drop a second homework score for medical or health reasons. Note that we can drop your two lowest homework scores in order to enable to you miss a homework due to medical or health or other reasons. Being sick does not enable you to bank that dropped homework grade for later and get another one.*

Canvas: The class will make use of Canvas to post assignments, grades, announcements, etc. You will be responsible for checking Canvas regularly during the semester.

Exams: There will be three exams. Exam attendance is *mandatory*; please make sure you can attend the exams *before* enrolling in the course. Exams are closed-book and closed-notes. No calculators, computers, or smart phones are allowed. However you can bring a one page handwritten “cheat sheet”.

The first in class midterm exam is on Thursday, February 12. **Before the drop deadline.**

The second in class midterm exam is on Tuesday, March 24. **Before the withdraw deadline.**

The FINAL EXAM is common and on the date scheduled by the Registrar (which looks to be Monday, May 11 from 12-2pm) .

Registrar Final Exam Schedule: <http://www.upenn.edu/registrar/finals/index.html>

Make-up Exams: There are officially no make-up exams during the Spring semester. If you miss one of the midterm exams for medical or health reasons, then your other midterm exam can be counted for 100% of your midterm exam grade. If you miss both midterm exams, then you will need to withdraw from the course. If you miss the Final Exam for medical or health reasons then you will receive a grade of “I” and you will need to take a make-up final during the designated “Spring 2015 Postponed Exam Schedule” of the registrar (which looks to be Wednesday August 26, 2015 from 6-8pm).

Regrade requests: Exam Regrade requests must be submitted in writing. Regrade requests should be submitted only in cases in which you believe the grader has made a mistake in grading your work (in particular, requests for more partial credit will generally be rejected since considerable care is taken in assigning partial credit uniformly and fairly to all students). In the event of a regrade request, the entire exam will be graded again (and so in some circumstances the score may actually go down). Exam regrades can only be requested within three weeks of each exam date. Exams will be viewable in your recitation section, and exams taken out of the recitation room are considered final and re-grade requests are no longer allowed at that point.

Evaluation and Grading:

Your final course grade is calculated as follows:

- **10% Preparation for class:** To get full credit, you must hand in your complete pre-class preparation worksheet at the start of class on the day of the corresponding lecture. Late worksheets are not accepted.
- **10% Attendance/participation:** Half of this is for showing up physically. The other half is for showing up mentally...meaning being engaged in your group's discussion, and not being distracted. We will be taking attendance because active learning doesn't work if students are not present.
- **10% Quizzes in recitation:** It is required that you read each section of the text *before* class. This is enforced by a short quiz in recitation, based on material that is easily understood on first reading. Video lectures are available to supplement or replace the reading for those who prefer that format.
- **5% online homework:** This consists of a few problems chosen from the textbook problems for the section. Because this is *before* we address the topic in class, we check only whether you attempt all the problems, not whether you get them right.
- **5% written homework:** The other half of the homework is to complete and correct the previous day's worksheet. These are on material which we have taught in class and are checked for correctness.
- **15% Exam I and 15% Exam II.**
- **30% Common final exam.**

Math Department Calculus Curve: 30% A, 30% B, 30% C, 10% D or F. Unfortunately we have very little flexibility on changing the Math Department Calculus Curve. This curve is enforced across all sections of Math 104 this semester evenly, and the actual percentage of A's, B's and C's etc that will be assigned to this class will be determined by your grades on the Common final exam.