Welcome to Math 104!

The first thing you need to know about Math 104 is that even though it is called Calculus I, it is not really Calculus I. The course should be called Calculus II. This course covers integration techniques (integration by parts, trigonometric substitution, etc.), applications of integration (finding volumes and surface areas of solids of revolution, arc length, center of mass), some basic differential equations (separable and first-order linear), and sequences and series. If you have never taken an introductory calculus course, you should be in Math 103, not 104. Your introductory calculus course should have covered limits and continuity, differentiation (product rule, chain rule, etc.), the definition of the integral, the Fundamental Theorem of Calculus, and some basic antiderivatives; these things will be assumed as background and not covered explicitly in this Math 104 course.

Textbook: The textbook is the standard book for Penn's 100-level calculus courses, namely Thomas' Calculus Early Transcendentals, second custom edition for the University of Pennsylvania. It is available through the Penn bookstore. This course covers most of Chapters 6, 8, 9, and 10, and Section 7.2.

Intro survey: I want to get to know you guys! Please fill out the short intro survey; you should have received a link by email, and it is also posted on Piazza. Just for fun, here are my answers:
Email: stepe@sas.upenn.edu
Name, Major, Year: Stephen Eric Gillen, mathematics, second-year grad student
Right- or left-handed (for test day seating): Right-handed
Calculus background: Single- and multivariable calculus, basic ordinary (though not partial) differential equations, and some proof-based analysis. I have also taken classes in combinatorics, which makes extensive use of power series (a topic you will learn near the end of this course).
Dream career: Math professor
Obligations for this summer: In this first summer session, I expect to be focusing primarily on teaching this course. But starting in the second summer session, I will have the rather daunting task of trying to figure out what I will be doing with the rest of my mathematical career.
Interests outside of school: Going bowling and playing the saxophone (when on vacation)
General attitude toward mathematics: Very positive
Other info: I went to Georgia Tech undergrad and had a secondary major in computer science

Office hours: I plan to hold an office hour for each homework assignment and each test. I will be holding office hours tonight 6-7pm; please fill out the WhenIsGood tonight, if you haven't already, to help me determine office hours for the rest of the semester. My office is DRL 4E14, which is literally just around the corner.

Math help: In addition to my office hours, the math department has math help hours Monday through Thursday 9am to 1pm (so before this class) in DRL 4C8, right up the hall. These are run by Qingyun (Andy) Zeng, who just finished his third year in the math Ph.D. program. This gives you two natural opportunities to ask homework questions: my evening office hour and Andy's morning help sessions (except for the two homework assignments that will be submitted online).

Piazza: You should have been invited to the course on Piazza. This is the best place to bring up any issues you may be having with the course if you cannot make it to office hours. Note that other students can see your post unless you mark it private, but this also means that other students can help answer your question.

Important deadlines (https://www.sas.upenn.edu/summer/calendar)
May 29th: Deadline to add a course / drop with no financial obligation
June 7th: Deadline to drop with 50% financial obligation. Students must contact their home
      school by the deadline to have the course dropped and the money refunded.
June 19th: Deadline to withdraw from the course with a W (but full financial obligation)
I will make every effort to post your test grades to Canvas promptly.

Attendance: Attendance is vital to success in this course; missing a two-hour lecture is equivalent to missing most of a week in a typical spring course. Attendance does not count as a percentage of your grade on its own, but you must be present in order to take the quizzes (see below), and if you submit a quiz with reasonable effort, you are guaranteed at least a 3/15. No make-up quizzes will be allowed.

Homework: This course will be more homework-heavy than you are probably used to in college, mostly because it is a compressed summer course. Homework will not be accepted late and will be assigned at the end of most lectures and due at the beginning of the following lecture, with a couple of exceptions, namely, homework assigned on the Thursday before a Tuesday test. The homework assigned on the Thursday before a Tuesday test will be due ONLINE (submitted through Canvas) by 7:55pm on Friday. This has two advantages: I will be able to grade them and give them back to you on Monday (the day before the test), and you will have more time to focus on studying for the upcoming test. Expect each homework to be seven problems from the book, each graded on a scale from 0 to 3. Some lectures in this course will cover more than one section of the textbook; when this happens, the problems will be distributed over more than one section. The lowest score will be dropped, and the other homeworks will total about 30% of your grade.

Quizzes: One super-important thing you have to understand about this course is that you often need earlier material in order to work problems in later material. For example, if you don't understand integration by parts, then you will not be able to evaluate an improper integral of a function that requires integration by parts to find the antiderivative. If you don't understand improper integrals going to infinity, then you will not be able to use the integral test to test series for convergence later in the course. In order to encourage you to study the material from every lecture before the next lecture, most classes (as noted in the course outline) will begin with a short quiz (10-15 minutes, 15 points each). I am planning on giving 15 such quizzes. This will also give you an idea about what test questions will be like, and you will receive some feedback about your knowledge of most material in a test-like situation before the actual test. Also, a low quiz score or two will not damage your grade too much: The lowest two quiz scores will be dropped, and the rest of the quizzes combined amount to only about 20% of your grade.

Tests: The test dates are as follows:
Test 1: Tuesday, June 5th (1 hour 20 minutes, 140 points)
Test 2: Tuesday, June 19th (1 hour 20 minutes, 140 points)
Final: Wednesday, June 27th (2 hours, 200 points)

Make-up tests: Try to avoid missing tests if at all possible. If you have to make up a test, it will be deliberately slightly harder than the original because you would have more time to prepare, and for a Tuesday test, you also will not have nearly as much information about how you are doing in the course at the corresponding important deadline (drop without a W or withdraw with W). If for some reason you cannot take a test, email me as soon as possible (preferably no later than 7:55pm on the day of the test) with all your available times to make up the test later that week between 10am and 8pm; all make-ups should be completed by Friday of that same week.

Regrades: If you need something regraded, please let me know no later than two classes after you have received your graded paper. Do not wait until the end of the course.

Outline of the course (Subject to change!)

Date	Quiz	Topic 1	Topic 2
5/22	RU Ready	4.5 L'Hopital's Rule (Review)	10.1 L'Hopital limits of sequences
5/23	4.5, 10.1	5.5 U-substitution (Review)	8.2 Integration by Parts
5/24	5.5, 8.2	8.3 Trig Integrals	8.4 Trig Substitution
5/29	8.3, 8.4	8.5 Partial Fractions	**Review Integration (8.2-8.5)**
5/30	5.5, 8.2-5	8.7 Numerical Integration	8.8 Improper Integrals
5/31	8.7, 8.8	7.2 Separable Diff. Equations*	9.2 First-order linear diff. eq.*
6/04	7.2, 9.2	9.1, 9.3: Applications, approx. sols.	**TEST 1 REVIEW**
6/05		**Test 1**	6.1 Intro to Volume
6/06	NONE	6.1 Volume using Cross-Sections	6.2 Volume using Cylindrical Shell
6/07	6.1, 6.2	6.3 Arc Length	6.4 Surface Areas of Revolution
6/11	6.3, 6.4	6.6 Center of Mass	8.9 Probability **(+brief rvw. Ch. 6)**
6/12	6.6, 8.9	10.2 Infinite Series	10.2 Geometric & Telescoping
6/13	10.2	10.3 Integral Test	10.4 Comparison Tests
6/14	10.3, 10.4	10.5 Ratio & Root*	**Review Positive Series***
6/18	10.2-5	10.6 Alternating Series Test	**TEST 2 REVIEW**
6/19		**Test 2**	10.7 Intro to Power Series
6/20	10.6	10.7 Power Series	10.8 Taylor and Maclaurin Series
6/21	10.7, 10.8	10.9 Convergence of Taylor Series	10.10 App. of Taylor Series
6/25	10.9, 10.10	Review, or space for a topic in case we fall behind	
6/26	NONE	**FINAL REVIEW**	
6/27		**Final**	

* Homework assigned on these two Thursdays will be due ONLINE on Canvas by 7:55pm Friday, NOT in class on the following Monday. This is so you can get it back graded on the Monday, before the Tuesday test.