

## University of Pennsylvania Calculus I, Math 104-920 Syllabus

**Instructor:** Maxim Gilula  
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**Office:** DRLB 3C13  
**Office Hours:** TBA (based on your schedules) and by appointment

**Course time:** 10:00 AM- 12:10 PM, Monday through Thursday  
**Course Location:** DRLB 4C8  
**Course textbook:** *Thomas' Calculus Early Transcendentals Custom Edition for the University of Pennsylvania* Pearson 2012.

**Course description:** We will begin with a brief review of the prerequisite material from Math 103. You can find that material at <http://hans.math.upenn.edu/ugrad/calc/m103/> . Although Math 104 is called “Calculus I,” you are expected to be proficient with derivatives (what they mean and how to compute them) and to be slightly familiar with integration. See the syllabus at the link above for a complete list of topics.

After the review, we will cover most of the topics found in chapters 6-10 of *Thomas' Calculus*. This material includes computing volumes, areas of surfaces, various integrating techniques, sequences, series, and more. Please find the complete list on the syllabus of the official Math 104 page at <http://www.math.upenn.edu/ugrad/calc/m104/> .

The course will be very fast paced, as we will be fitting a semester's worth of material into a five week course. It will be vital to keep up with the material in order to not get lost in the middle of the course. Coming to office hours or making your own study groups could be beneficial to your learning process. No calculators will be allowed for the midterms and final.

**Grading:** 25% Homework  
75% Midterms and Final

Usually Math 104 is curved to have a grade distribution of 30% A's, 30% B's, 30% C's, 10% D/F. However, if everyone does well, everyone can get good grades.

<b>Schedule for assignments:</b>	Midterm #1	July 11, 2013	worth <b>20%</b>
	Midterm #2	July 25, 2013	worth <b>25%</b>
	Final	August 8, 2013	worth <b>30%</b>

Homework is a very important part of this course. The material is nearly impossible to learn without doing many practice problems. The number of problems you do carefully will be positively correlated with your final grade. Homework will be assigned on Tuesdays and will be due in class the following Tuesdays. I plan on assigning five homework assignments.

I will grade only one type of problem per homework due to time constraints. However, every problem should be taken seriously and you might even want to do extra problems to help the material sink in. Problems are really the best way to learn the material in this course.

**Miscellaneous:** If you would like extra help outside of office hours, there are opportunities for free calculus help on campus. Monday through Thursday from 9:00am – 1:00pm you can go to Matthew Wiener in **4C6** for any questions you may have with the material.

Moreover, you are responsible for following the University of Pennsylvania's academic integrity code found at <http://www.upenn.edu/academicintegrity/>.

Tentative Schedule:

7/1/13	Review parts of chapter 3, 4 and 5.
7/2/13	6.1 Volumes Using Cross-Sections 6.2 Volumes Using Cylindrical Shells
7/3/13	6.3 Arc Length
7/8/13	6.4 Areas of Surfaces of Revolution
7/9/13	6.5 Work and Fluid Forces 6.6 Moments and Centers of Mass
7/10/13	8.1 Integration by Parts
<b>7/11/13</b>	<b>Midterm #1</b> (everything up to section 6.6)
7/15/13	8.2 Trigonometric Integrals 8.3 Trigonometric Substitutions
7/16/13	8.4 Integration by Partial Fractions 8.6 Numerical Integration
7/17/13	8.7 Improper Integrals
7/18/13	8.8 Probability: <a href="http://www.math.upenn.edu/ugrad/calc/m104/ThomasProb.pdf">http://www.math.upenn.edu/ugrad/calc/m104/ThomasProb.pdf</a>
7/22/13	10.1 Sequences 10.2 Infinite Series
7/23/13	10.3 The Integral Test 10.4 Comparison Tests
7/24/13	10.5 Ratio and Root Tests
<b>7/25/13</b>	<b>Midterm #2</b> (Material covered 7/10/13 – 7/22/13)
7/29/13	10.6 Alternating Series; Absolute and Conditional Convergence
7/30/13	10.7 Power Series 10.8 Taylor and Maclaurin Series
7/31/13	10.9 Convergence of Taylor Series 10.10 The Binomial Series and Applications of Taylor Series
8/1/13	9.1 Solutions, Slope Fields, and Euler's Method
8/5/13	7.2 Exponential Change and Separable Differential Equations 9.2 First-Order Linear Equations 9.3 Applications
8/6/13	Catch up/Review
8/7/13	Catch up/Review
<b>8/8/13</b>	<b>Final</b> (Cumulative but more focused on the last three weeks of class)