

**Mathematics MT105**  
**Calculus II**  
**Fall 2009**

**Instructor:** Eli Grigsby  
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**Office hours:** T, W 11 AM-12 PM  
**(357 Carney)** Th 3 PM-4 PM  
or by appointment

**Course Meetings:** (Section 1) MWF 9 AM - 10 AM  
(Section 2) MWF 10 AM - 11 AM  
Campion 303

**Course Outline and Prerequisites:** This is a second course in single-variable calculus intended primarily for those students intending to major in Mathematics, Chemistry, CS/BS, Physics, Geology, or Geophysics. It is appropriate for those students who have completed a year of calculus in high school at the AB or BC level but who are not yet prepared to take multivariable calculus, MT202.

I will assume that you are comfortable with the concepts and techniques surrounding differentiation of single-variable functions. I will also assume that you have had some exposure to the Fundamental Theorem of Calculus and its use in computing integrals. The first one-third to one-half of the course will focus on techniques and applications of integration, taking special care to emphasize the geometric meaning of the integral as the limit of a Riemann sum (and, hence, the “signed area” beneath the graph of a single-variable function). The remainder of the course will provide an introduction to infinite sequences and series, focusing on their convergence properties.

**Course Material:** All handouts for the course as well as announcements, homework and reading assignments, midterm review problems, old tests and quizzes, etc. will be available through the Blackboard Vista site for the course. I will also maintain a calendar on the site, warning you of upcoming due dates, quizzes, exams, and other announcements. Please check the site frequently.

**Text:** Blank and Krantz, *Calculus, Single Variable*, 1st edition, Key College Publishing, 2006.

**Course blog:** I plan to blog regularly, using the discussion feature of Blackboard Vista. I strongly encourage all of you to make use of this feature as well:

e.g., to post and answer each others' questions, provide anonymous feedback on the pace/content of the course, organize study sessions, etc.

**Extra help:** In addition to my office hours and the course blog, the free walk-in tutoring services offered by the mathematics department in Carney Hall, room 309, and by the Connors Family Learning Center on the second floor of the O'Neill Library are a great resource. Please see

- [www.bc.edu/schools/cas/math/ugservices/tutoring.html](http://www.bc.edu/schools/cas/math/ugservices/tutoring.html)
- [www.bc.edu/libraries/help/tutoring.html](http://www.bc.edu/libraries/help/tutoring.html)

for more information.

**Reading:** On the Blackboard Vista calendar for the course, I will assign reading to be completed before each lecture. *All assigned reading is fair game for the exams, whether specifically addressed in lecture or not.* That said, I will do my best in lecture to emphasize the most relevant material.

**Homework:** Weekly problem sets will be assigned in class and posted on Blackboard Vista every Friday, to be turned in the following Friday at the beginning of class. The first homework assignment is due Friday, September 18. *Late homeworks will not be accepted.* The lowest homework score will be dropped.

**Quizzes:** A weekly ten-minute quiz will be held every Friday during class, unless I explicitly tell you otherwise during lecture. The first quiz will be given on Friday, September 18. *No makeup quizzes will be given.* The lowest quiz score will be dropped.

**Midterms:** Two midterm exams will be held during the normal class time on Wednesday, October 14, and Monday, November 16. *Makeup exams will not be offered except in extreme situations.* Please inform me as soon as possible if you must miss a midterm.

**Final Examination:** There will be a three-hour final exam at the end of the term. *All students must take the final at the time scheduled by the University.* If there is a conflict with the scheduled time, you must inform me as soon as possible. Alternate arrangements will only be made in extreme circumstances. The current final exam schedule is:

- Section 1 (MWF 9-10) 12:30-3:30 P.M., Thursday, Dec. 17
- Section 2 (MWF 10-11) 12:30-3:30 P.M., Saturday, Dec. 19

**Calculators:** No calculators will be allowed or needed for any of the quizzes or exams, unless I specifically announce otherwise.

**Academic integrity policy:** I strongly encourage you to work together on problem sets for the course. Talking about math is the easiest, most efficient, (and most fun!) way to learn math. However, each student must write up solutions to homework problems individually. Copying (or even paraphrasing) someone else's solutions or the solutions from a solution manual does not constitute an individual write-up. I have a zero-tolerance policy for academic dishonesty, both in problem sets and on quizzes and exams. If you are caught cheating on a problem set, you will receive a zero on the problem set. If you are caught cheating on a quiz or exam, you will receive a zero for the course. I encourage you to read BC's policy on academic integrity at [www.bc.edu/integrity](http://www.bc.edu/integrity).

**Grading:** The course grades will be computed as follows: Homework 10%, Quizzes 15%, Each midterm 20%, Final 35%.

<b>Date</b>	<b>Section</b>	<b>Topic</b>
9/9	<b>5.1</b>	Integration, Area, Riemann sums
9/11	<b>5.2</b>	Limits and the Fundamental Theorem of Calculus
9/14	<b>5.3</b>	Rules for Integration
9/16	<b>5.4</b>	Really understanding the FTC
9/18	<b>5.5</b>	Integration technique: Substitution
9/21	<b>5.6</b>	More on integration and area
9/23	<b>3.6 &amp; 6.6</b>	Review of inverse functions
9/25	<b>6.6</b>	Inverse trig functions
9/28	<b>7.1</b>	Integration by parts
9/30	<b>7.2</b>	Method of partial fractions
10/2	<b>7.2</b>	More practice with partial fractions
10/5	<b>7.3</b>	Powers and products of trig functions
10/7	<b>7.4</b>	Integrals involving quadratic expressions
10/9	<b>Review</b>	
10/12	<b>No class</b>	
10/14	<b>Midterm 1</b>	
10/16	<b>7.5</b>	Partial fractions, revisited
10/19	<b>8.1</b>	Volume
10/21	<b>8.2</b>	Arc length and surface area
10/23	<b>8.3</b>	Average value of a function
10/26	<b>8.4</b>	Center of mass
10/28	<b>8.5</b>	More word problems
10/30	<b>8.6</b>	Improper integrals and limits
11/2	<b>8.7</b>	More improper integrals
11/4	<b>9.1</b>	Series: Intro
11/6	<b>9.2</b>	Series: Convergence
11/9	<b>9.2</b>	Series: More convergence
11/11	<b>9.3</b>	Integral test for convergence
11/13	<b>Review</b>	
11/16	<b>Midterm 2</b>	
11/18	<b>9.4</b>	Comparison test for convergence
11/20	<b>9.5</b>	Alternating series
11/23	<b>9.6</b>	Ratio and root tests for convergence
11/25	<b>No class: Thanksgiving</b>	
11/27	<b>No class: Thanksgiving</b>	
11/30	<b>10.1</b>	Power series and radius of convergence
12/2	<b>10.2</b>	Operations on power series and examples
12/4	<b>10.3</b>	Taylor polynomials
12/7	<b>10.3</b>	More on Taylor polynomials
12/9	<b>10.4</b>	Error term for Taylor expansions
12/11	<b>10.5</b>	Infinite Taylor series
12/17	<b>Final (sec 1), 12:30 PM - 3:30 PM</b>	
12/19	<b>Final (sec 2), 12:30 PM - 3:30 PM</b>	