Calculus A (Math 111) Syllabus
Spring 2010

Contact Information

Professor: Chris Camfield
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Office Hours: Monday – Friday 2:00 – 3:00
Additional times by appointment

Office hours are for your benefit, and you are encouraged to take advantage of them. If you are unable to meet during the posted times, please feel free to contact me. I will happily try to find a time to accommodate you.

Course Information

Classroom: L09 Peirce Hall

Time:
Monday 1:10 – 2:00
Wednesday 12:10 – 2:00 (with a 10 minute break)
Friday 1:10 – 2:00

Course web page: http://www2.kenyon.edu/Depts/Math/Camfield/111s10.html

Required textbook: *Calculus from Graphical, Numerical, and Symbolic Points of View, Volume 1*, Second edition, by Arnold Ostebee and Paul Zorn.

Software: Some work will be done in class using *Maple 13*. I will assume no prior knowledge of the program, so you will be taught what you need to know as we go along. A free copy of the student version of *Maple 13* for your personal computer can be obtained from Professor Klopcic in 101 Hayes Hall.

Course Description

The first in a three-semester calculus sequence, this course covers the basic ideas of differential calculus. Differential calculus is concerned primarily with the fundamental problem of determining instantaneous rates of change. In this course we will study instantaneous rates of change from both a qualitative geometric and a quantitative analytic perspective. We will cover in detail the underlying theory, techniques, and applications of the derivative. The problem of anti-differentiation, identifying quantities

given their rates of change, will also be introduced. The course will conclude by relating the process of anti-differentiation to the problem of finding the area beneath curves, thus providing an intuitive link between differential calculus and integral calculus. Prerequisites: solid grounding in algebra, trigonometry, and elementary functions.

Course Procedures

Attendance:

Attendance at each class period is expected, but will not be graded. In the event of an excused absence (such as an athletic or other activity approved by the Dean of Students and the Dean of Academic Advising and Support), you must contact me in advance to make the appropriate arrangements. In the case of an emergency or illness, you need to first contact the Dean of Students. In the event of an absence, you are responsible for the material discussed during the missed class. You should check the web page and/or talk to a classmate to find out what you missed. While I am happy to answer questions in office hours, I will not repeat entire lectures for absent students.

Homework:

Homework problems will be assigned regularly consisting of problems from the text and created by myself. Homework will collected at the *BEGINNING* of class on the day it is due, and late homework will not be accepted. Extensions may be granted at my discretion, but must be discussed with me in advance. If you will miss class due to an excused absence (see section on attendance), please notify me in advance if possible.

You are expected to turn in neat and legible homework with problems and answers easily identifiable (neatness will factor into the grade). Explanations are to be written in complete sentences. Homework assignments will usually be posted on the course web page after being assigned. *The classroom announcement serves as official notification of assignments.*

Exams:

There will be two in-class midterm exams and one final exam, all of which should be considered comprehensive. The midterm exams will focus on the most recent material, but the nature of how the course builds upon itself makes all of the material relevant. Books, notes, and calculators are not permitted to be used during the exams.

Projects:

Effective communication of mathematical ideas in written and oral form is an important goal of this course. There will be two projects which will include a significant writing component. More information will be given in class.

Gateway Exam:

The differentiation gateway exam is a purely computational exam, designed to make sure that you are obtaining the analytical (grammatical) skills that are required to do calculus. The gateway exam will be given on Friday, March 26th, after we have covered the essential rules of differentiation, and will consist of seven problems that test your ability to apply these rules correctly. To pass the gateway exam, you must present flawless solutions to six of the seven problems on the exam. The gateway exam is worth 10% of your final course grade. Since perfect solutions are required, a reasonable number of retakes of the gateway exam are permitted according to the following guidelines.

a. Retakes will be of similar format to the first gateway exam, but will consist of different problems.
b. A student may take no more than 2 retakes per week, and may take at most 1 retake in any given day. You may not retake the exam after 4pm on the day of classes.
c. A student who passes the gateway exam on their first attempt will receive 120%. That ends up being a 2% bonus on your course grade!
d. A student who passes a retake by 4pm on Friday, April 16th after the gateway exam is first given will receive 100% on the exam.
e. A student who passes a retake after more than two weeks have passed since the first gateway exam was given will receive 50% on the exam.
f. A student who fails to pass the gateway exam before 4pm on the last day of classes will receive 0% on the exam.

Assessment

Your final course grade will be based on the following components and corresponding weights.

Homework	12%	Exam 1	15%
Labs	8%	Gateway	10%
Project 1	10%	Exam 2	15%
Project 2	10%	Final Exam	20%

General Classroom Policies

Participation:

Classroom participation is encouraged and may factor into your final grade in borderline situations. There will be numerous opportunities to speak in class and present work in front of the class. Mathematical dialogue between students and the professor will be a regular part of class. Questions and comments are encouraged during class.

Computers and Cell Phones:

Our classroom provides a computer work station for each student. While class is in session, the computers are only to be used for class activities. Cell phones need to be in silent mode during class (preferably off).

Email:
Official class announcements will only go to your Kenyon email address. Check it often.

Academic Honesty:
In general, the rules set forth in the 2009-2010 Course of Study apply. Presenting the work of others as your own is strictly prohibited. In the case of homework, you may collaborate with others in discussing how a problem may be solved, but your write-up must be your own. If you submit work that contains the ideas or words of someone else, then you must provide proper citation. Assistance cannot be given nor received (other than by the instructor) on any quiz, or exam associated with this course, except where explicitly allowed by the instructor. For further information, consult your instructor.

Disability Accommodation:
If you have a disability or feel that you may have need for some type of academic accommodation in order to participate fully in this class, please feel free to discuss your concerns with me in private and also contact Erin Salva, Coordinator of Disability Services at PBX 5453 or via e-mail at salvae@kenyon.edu.

Tentative Course Schedule

This schedule is tentative and will be adjusted as necessary. Topics of actual lectures will appear on the course web page after they are given. Exam dates are unlikely to change.

Week	Date	Topic
1	Mon, Jan 18	1.1 Functions, Calculus Style
	Wed, Jan 20	1.2 Graphs, Introduction to *Maple*
	Fri, Jan 22	1.3 A Field Guide to Elementary Functions
2	Mon, Jan 25	1.4 Amount Functions and Rate Functions
	Wed, Jan 27	1.5 Estimating Derivatives, Problem Solving
	Fri, Jan 29	1.6 The Geometry of Derivatives
3	Mon, Feb 1	1.7 Geometry of Higher-Order Derivatives
	Wed, Feb 3	Problem Solving
	Fri, Feb 5	2.1 Defining the Derivative
4	Mon, Feb 8	2.1 Defining the Derivative
	Wed, Feb 10	2.2 Derivatives of Power Functions, Limits Lab
	Fri, Feb 12	2.3 Limits
5	Mon, Feb 15	2.3 Limits
	Wed, Feb 17	2.5 Differential Equations; Modeling Motion, Differential Eqns Lab
	Fri, Feb 19	2.4 Using Derivative and Antidifferentiation Formulas
6	Mon, Feb 22	Review
	Wed, Feb 24	**Exam 1**
	Fri, Feb 26	2.6 Derivatives of Exponential and Logarithmic Functions
7	Mon, Mar 1	2.7 Derivatives of Trig Functions, Problem Solving
	Wed, Mar 3	3.1 Algebraic Combinations: Product and Quotient Rules
	Fri, Mar 5	3.2 Composition and the Chain Rule
Spring Break		

Week	Date	Topic
8	Mon, Mar 22	Review of Differentiation Rules
	Wed, Mar 24	3.3 Implicit Differentiation, Problem Solving
	Fri, Mar 26	**Differentiation Gateway Exam**
9	Mon, Mar 29	3.4 Inverse Functions and their Derivatives
	Wed, Mar 31	3.5 Miscellaneous Derivatives
	Fri, Apr 2	4.1 Slope Fields
10	Mon, Apr 5	4.2 Limits Involving Infinity; l'Hopital's Rule
	Wed, Apr 7	4.3 Optimization
	Fri, Apr 9	4.5 Related Rates
11	Mon, Apr 12	Review
	Wed, Apr 14	**Exam 2**
	Fri, Apr 16	4.6 Newton's Method
12	Mon, Apr 19	4.8 Why Continuity Matters
	Wed, Apr 21	4.9 Why Differentiability Matters
	Fri, Apr 23	Antidifferentiation Practice
13	Mon, Apr 26	5.1 Areas and Integrals
	Wed, Apr 28	5.2 The Area Function, Integration Lab
	Fri, Apr 30	5.3 The Fundamental Theorem of Calculus
14	Mon, May 3	5.3 The Fundamental Theorem of Calculus
	Wed, May 5	5.4 Finding Antiderivatives by Substitution
	Fri, May 7	Review
15	**Fri, May 14**	**Final Exam 1:30 – 4:30**

The time and date of the final exam is set by the Registrar's Office and cannot be changed. Family vacations and work schedules are not sufficient grounds for special accommodations.