

# MA 123 (Elementary Calculus)

**Time & Location:** click [here](#).

## **Texts:**

The text listed in #1 below is the official text for the course. It is very readable and has many worked out examples. The set of notes listed under #3 below is available for free online. The fourth text listed below is a good study guide for students.

1. **Calculus** by Elliot Gootman. The book is published by Barron's, and it will be the primary text for the course. The book can be purchased from the bookstores or online. We shall cover the first ten (10) chapters of this book.
2. **Lecture Notes**. (Click [here](#) to download.)
3. **A Brief Introduction to Calculus** by Robert Molzon. (Click [here](#) to download.)  
This is a set of notes that you may find useful for basic concepts. You might want to download the notes and print a copy. The initial part of the course will review algebra, and these notes should be very useful for that review.
4. **How to Ace Calculus: The Streetwise Guide** by C. Adams, J. Hass, and A. Thompson.  
This inexpensive book might be a useful guide to study methods for calculus and math in general.

## **Goals:**

This course will cover each of the topics from the first ten chapters of the text, Calculus, by Gootman. All of these topics are covered in the online homework sets. Your main goal should be to learn the material well enough so that you can use calculus in an applied context such as business or social science. It is virtually impossible to learn mathematics without actively taking part in the learning. To understand what this means, consider the impossibility of learning to play tennis by listening to someone describe how to play tennis. You will not learn the material in this course by listening to the lectures, and thinking to yourself - "Yes, I understand that". You must work the problems and make mistakes before you will begin to learn. The instructor's task is that of an assistant to help you learn as

much of the material as you desire.

In this course it will not be sufficient to memorize an algorithm for doing specific types of problems. You will be expected to understand the material well enough so that you can work problems similar to, but not identical to the ones we work in class and the ones you encounter in the homework.

**Prerequisites:**

You should have a strong understanding of college algebra and an ACT score of at least 26 or a score of 70% on the placement exam. If you have a weak algebra background it is essential that you immediately brush up on this prerequisite. Most students who do not do well in calculus, find that the required algebra is the major roadblock.

**Corrections to:** [corso@ms.uky.edu](mailto:corso@ms.uky.edu)

# MA 123 Fall 2009

## Sections 006 - 009

Professor David Leep  
Department of Mathematics  
University of Kentucky

Office: 833 Patterson Office Tower (833 POT)  
Telephone: (859) 257-6813  
E-mail: [leep@ms.uky.edu](mailto:leep@ms.uky.edu)

Office Hours (for David Leep): Monday, Wednesday, Friday 12:30 - 1:30 pm  
Additional office hours can be made by appointment and are welcome.

Lecture: MWF 10:00 - 10:50 pm CB 114

### Teaching Assistants (TA's):

Section 006	Aaron Saxton	Tuesday	3:30 - 4:45 pm	CB 242
Section 007	Laura Steil	Thursday	3:30 - 4:45 pm	CB 242
Section 008	Laura Steil	Tuesday	3:30 - 4:45 pm	CB 222
Section 009	Aaron Saxton	Thursday	3:30 - 4:45 pm	CB 222

Office Hours (for the teaching assistants):  
Aaron Saxton: tba in the Mathskeller  
Laura Steil: tba in the Mathskeller

The main syllabus for Ma 123 can be found at [www.ms.uky.edu/~ma123](http://www.ms.uky.edu/~ma123)  
Homework for the class can be found at <http://www.mathclass.org/>  
Class notes can be downloaded from [here](#)

**Grading policy:** A short 5 minute quiz will be given two or three times per week. There will be no make-up quizzes; however, I expect to drop the lowest three scores. I will incorporate the quiz scores in the homework grade as follows. There are 100 points allotted for the homework score. The quiz scores will contribute up to 20 points of these 100 points and the remaining 80 points will be based on the homework scores from the online homework system.

**Classroom behavior:** I expect students to come to class on time and show respect for fellow

students. That includes, but is not limited to the following. Do not talk unnecessarily during class. The lecture class is large and conversations among students will disturb others who are trying to listen to the lecture. Do not leave class early, since that can be annoying to others who are trying to listen to the lecture.

**Advice:**

Form good study skills from the start.

1. Come to class.
2. Read the text and do the homework.
3. Do not fall behind. It is often hard to catch up in a math class after falling behind.
4. If you are having trouble, then seek help without delay. There are many resources available in the Mathskeller and in The Study.
  - A. Find classmates to study with.
  - B. Go to office hours.
  - C. Talk to me before or after class.
  - D. Talk to or send e-mail to your TA, if necessary.
  - E. Tell your TA or me if you are having problems or if you think that there is a problem with the course.

## Tentative Course Schedule - MWF Classes

Date	Description
W 8/26	Introduction
F 8/28	Algebra Review (Chapter 1)
M 8/31	Algebra Review (Chapter 1)
W 9/2	Rates of Change (Chapter 2)
F 9/4	Rates of Change (Chapter 2)
M 9/7	<i>Labor Day - no class</i>
W 9/9	Rates of Change (Chapter 2)
F 9/11	Limits (Chapter 3)
M 9/14	Limits (Chapter 3)
W 9/16	Limits (Chapter 3)
F 9/18	Computing some Derivatives (Chapter 4)
M 9/21	Review for Exam 1
W 9/23	Review for Exam 1; EXAM 1, 5-7 pm
F 9/25	Computing some Derivatives (Chapter 4)
M 9/28	Formulas for Derivatives (Chapter 5)
W 9/30	Formulas for Derivatives (Chapter 5)
F 10/2	Formulas for Derivatives (Chapter 5)
M 10/5	Higher Derivatives
W 10/2	Exponential and Logarithmic Functions (Supplement)
F 10/9	Exponential and Logarithmic Functions (Supplement)
M 10/12	Exponential and Logarithmic Functions (Supplement)
W 10/14	Extreme Values and Mean Value Theorem (Chapter 6)
F 10/16	Extreme Values and Mean Value Theorem (Chapter 6)
M 10/19	Review for Exam 2
W 10/21	Review for Exam 2; EXAM 2, 5-7 pm
F 10/23	Curve Sketching and Concavity (Chapter 6)
M 10/26	Curve Sketching and Concavity (Chapter 6)
W 10/28	Word Problems (Chapter 7)
F 10/30	Word Problems (Chapter 7)
M 11/2	Word Problems (Chapter 7)
W 11/4	The Idea of the Integral (Chapter 8)
F 11/6	The Idea of the Integral (Chapter 8)
M 11/9	The Idea of the Integral (Chapter 8)
W 11/11	Computing some Integrals (Chapter 9)
F 11/13	Computing some Integrals (Chapter 9)
M 11/16	Review for Exam 3
W 11/18	Review for Exam 3; EXAM 3, 5-7 pm
F 11/20	Computing some Integrals (Chapter 9)
M 11/23	Fundamental Theorem of Calculus: Antiderivatives (Chapter 10)

	Fundamental Theorem of Calculus; Antiderivatives (Chapter 10)
W 11/25	<i>Thanksgiving Break - no class</i>
F 11/27	<i>Thanksgiving Break - no class</i>
M 11/30	Fundamental Theorem of Calculus; Antiderivatives (Chapter 10)
W 12/2	Fundamental Theorem of Calculus; Antiderivatives (Chapter 10)
F 12/4	Fundamental Theorem of Calculus; Antiderivatives (Chapter 10)
M 12/7	Review for Final Exam
W 12/9	Review for Final Exam
F 12/11	Review for Final Exam
M 12/14	FINAL EXAM, 6-8 pm

# Tentative Course Schedule - TR Classes

Date	Description
R 8/27	Introduction; Algebra Review (Chapter 1)
T 9/1	Algebra Review (Chapter 1)
R 9/3	Rates of Change (Chapter 2)
T 9/8	Rates of Change (Chapter 2)
R 9/10	Limits (Chapter 3)
T 9/15	Limits (Chapter 3)
R 9/17	Computing Some Derivatives (Chapter 4)
T 9/22	Review for Exam 1
W 9/23	EXAM 1, 5-7 pm
R 9/24	Computing Some Derivatives (Chapter 4)
T 9/29	Formulas for Derivatives (Chapter 5)
R 10/1	Formulas for Derivatives (Chapter 5)
T 10/6	Higher Derivatives; Exponential and Log. Fcts. (Supplement)
R 10/8	Exponential and Logarithmic Functions (Supplement)
T 10/13	Extreme Values and Mean Value Theorem (Chapter 6)
R 10/15	Extreme Values and Mean Value Theorem (Chapter 6)
T 10/20	Review for Exam 2
W 10/21	EXAM 2, 5-7 pm
R 10/22	Curve Sketching and Concavity (Chapter 6)
T 10/27	Word Problems (Chapter 7)
R 10/29	Word Problems (Chapter 7)
T 11/3	The Idea of the Integral (Chapter 8)
R 11/5	The Idea of the Integral (Chapter 8)
T 11/10	Computing some Integrals (Chapter 9)
R 11/12	Computing some Integrals (Chapter 9)
T 11/17	Review for Exam 3
W 11/18	EXAM 3, 5-7 pm
R 11/19	Computing some Integrals (Chapter 9)
T 11/24	Fundamental Theorem of Calculus; Antiderivatives (Chapter 10)
R 11/26	<i>Thanksgiving Break - no class</i>
T 12/1	Fundamental Theorem of Calculus; Antiderivatives (Chapter 10)
R 12/3	Fundamental Theorem of Calculus; Antiderivatives (Chapter 10)
T 12/8	Review for Final Exam
R 12/10	Review for Final Exam
M 12/14	FINAL EXAM, 6-8 pm





# Course Policies

## Grading

You will be able to obtain a maximum of 500 points in this class, divided as follows:

Three 2-hour exams, 100 points each

Final exam, 100 points

Homework and Quizzes, 100 points

The Homework and Quizzes score will be computed as follows. There are 248 homework problems in the course, but the homework grade will be based on 220 problems. Thus, if you answer  $x$  homework problems correctly, your homework score will be  $(x/220)$  times 80. (220 correct homework problems will give you 80 points for the homework.) The quiz score will be at most 20 points. Your instructor will decide exactly how to award those points based on your in-class quizzes. Note that you if you answer more than 220 homework problems correctly, then you could end up with more than 100 points for the "Homework and Quizzes" score.

Your final grade for the course will be based on the total points you have earned as follows.

A: 450-500

B: 400-449

C: 350-399

D: 300-349

E: 0-299

The grading scale might be adjusted at the end of the semester on a course-wide basis (in other words, every instructor will use the same grading scale). You will be guaranteed the above letter grade if your score falls within the given range, but the minimum score for each letter grade might be lowered.

### **Attendance**

Attendance in MA123 is mandatory. Your instructor will inform you how s/he keeps track of your attendance.

Students who have university excused absences or who have university-scheduled class conflicts with uniform examinations may arrange with their instructor to take the exam at an alternate time. Generally these make-up exams will be scheduled on the day after the regularly scheduled exam. The time and room will be announced later. Work-related conflicts are neither university excused absences nor university-scheduled absences.

### **Academic Honesty**

Cheating or plagiarism is a serious offense and will not be tolerated. It will be thoroughly investigated, and might lead to failure in the course or even to expulsion from the university. See

<http://www.uky.edu/StudentAffairs/Code/part2.html>

(Sections 6.3.1 and 6.3.2) for information on cheating, plagiarism, and penalties.

A summary of recent changes to rules on cheating can be found at the Academic Ombud website:

<http://www.uky.edu/Ombud>

# Lecture Notes

Detailed notes with the plan for each chapter (goals, main facts and problems to be discussed in class) have been written in order to assist you throughout the course. They will be used as a primary means of instruction in some of the sections. They can be downloaded here:

- Chapter 1: **Equations, functions and graphs**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 2: **Change, and the idea of the derivative**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 3: **The idea of limits**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 4: **Computing some derivatives**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 5: **Formulas for derivatives**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Supplement: **Exponential and logarithmic functions**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 6: **Extreme values, the Mean Value Theorem, and curve sketching**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 7: **Word problems**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 8: **The idea of the integral**  
lecture notes                      practice/review problems  
notes with answers                  answers to practice/review problems
  
- Chapter 9: **Computing some integrals**

**Chapter 9: Computing some integrals**

lecture notes

practice/review problems

notes with answers

answers to practice/review problems

**Chapter 10: Formulas for integrals:**

**integrals, antiderivatives and the Fundamental Theorem of Calculus**

lecture notes

practice/review problems

notes with answers

answers to practice/review problems

# Homework

The course uses an online homework system called WebClass , and your homework is graded and recorded by the system. You can get to WebClass by going to the link <https://www.mathclass.org> . Information about WebClass is found at the link [webclass information.html](#) . **Before you try to login to WebClass, be sure to read the information on this page** . Be sure you have Cookies and Popups enabled on your browser. After you login, select the web homework link. This will take you to your MA123 class where you do your homework.

Each student has an individual, Personal Version of the web-based homework assignments to work and submit. For each problem set there is also a Common Version similar to the personal version. Everyone gets the same Common Version. Problems on the Common Version are the ones most likely to be discussed in class. **You are expected to solve the Personal Version on your own without help.**

You may attempt a problem as many times as you like. Only your final (and hopefully correct!) answer will be recorded for your homework grade. Additional attempts at a problem need not be made in the same online session, so you can reattempt the problem after getting help from your instructor, in the Mathskeller, or in the Study at the Complex Commons. If you submit the correct answer to a problem before the due date, you receive full credit for the problem.

Caution: The homework policy is generous in that you can attempt a homework problem as many times as needed. After each attempt, the computer tells you whether your answer is correct or not. During an exam, there is no immediate feedback. You must answer the question correctly the first time. In order to be well prepared for the exam, you must be able to work a problem correctly the first time without receiving feedback that a mistake has been made. Practice the homework problems enough so that you can do this. Receiving a high score in the homework might not be enough preparation for the exams if many of the homework problems were worked correctly only after multiple attempts.

If you submit an incorrect answer to a homework problem, the first thing to check is the syntax you used to submit the answer. A typo will obviously result in an incorrect answer. If you check the syntax carefully, and your answer is still incorrect, go back and rework the problem. It is often better to work other problems first, since it is quite easy to make the same error over and over. If after several attempts, you do not get a correct answer, then get help from your instructor or from a tutor in the Study or Mathskeller. Although the answers to all problems have been checked, it is still possible that there is an error in the system.

Homework will generally be due twice a week at midnight. The due dates are indicated on the homework sets. It is your responsibility to check these dates. **DO NOT WAIT UNTIL THE EVENING OF THE DUE DATE** to do the homework. No homework can be accepted late. If you miss class for a University trip, you must complete your assignments ahead of the due date.

In addition to the online homework, your instructor might give quizzes during class. If this is the case, your instructor will inform you how these quizzes will contribute to the 100 points in the homework category for your section. **Note that class attendance is mandatory for MA123. You will not be allowed to make up missed quizzes unless you have a valid university excuse.** If you anticipate an excused absence you must notify your instructor in writing two weeks before the absence.

# Web Homework Instructions

Students need to connect to the web page <https://www.mathclass.org>

This page describes how students should login to the MathClass website (also called WHS below)

to retrieve and submit homework assignments, check on grades and contact instructors.

**Software Requirements:** Use an internet browser, such as Internet Explorer 8.0 (or later version)

or Firefox 3.1 (or later version). Safari will not work correctly.

1. Connect to <https://www.mathclass.org>
2. Click on the link labeled **Login to WHS**.
3. Login using your campus active directory account with the user name typed as **ad\UserName** and the usual password for the "**UserName**" account.
4. If WHS decides that you need to set up a new Math Class account, then you will get a form entitled **Register for an Account**. Fill in the fields and submit the form.
5. These are the details of the form:
  - **Email:** Provide an e-mail where you will receive all further communication from WHS.  
Remember it well! In the future, you should log into WHS using this email as your user name.
  - **Password:** Set the password to be used for your WHS account.  
It must be at least 7 characters long and include a character that is neither a letter nor a digit.
  - **Security Question and Security Answer:** If you forget your password, you can

have

it reset by using the **Forgot your password** link on the login page and giving the

Security Answer in response to the Security Question. *The Security Answer is case*

*sensitive.*

- **First and Last Name:** These should be the same as what you use for University records.

Your instructor will need to match these with the name on the class roll and grading sheets.

- **Affiliation:** Select **College or University** and another pull-down will appear.

From it, select **University of Kentucky**. A text field labeled **UK or AS**

**Account**

will appear. Put in your active directory login name in the form **ad\UserName** (just like you did to login).

6. Finally, To **create the account**, click on the **\*Create User\*** button, then click on the **\*Continue\*** button.

7. Your WHS account should work normally, **unless** you have added the class within last few hours. In that case, you may have a delay of up to 24 hours for your new account to be active.

**For any further assistance, go to Mathskeller (063 CB, basement of the Classroom Building).**

**Using other computers:** A special setup is needed only if you use Internet Explorer for a mathematics class. Even this may be unnecessary for any Windows pc in any SCS Lab or the Mathskeller.

1. To install plugins for Internet Explorer, make sure you are logged in to an account



with administrative rights. For example, on a home computer, the first account created on the computer would have administrative rights.

2. Start up Internet Explorer, go to <http://www.dessci.com/>, click on the MathPlayer icon, and download and install the MathPlayer plugin.
3. Go to <http://www.adobe.com/svg> click on the link labeled Viewer Download, select the version for Win98-XP (even if you are running Vista), download and install it.
4. The first time you try to display a homework assignment, you will need to give permission to:
  - Display** pop-ups from the site
  - Run** the MathPlayer plugin on the site.
  - Run** the Adobe SVGViewer plugin on the site.
  - Accept** the Adobe license agreement
5. You may need also to put <https://www.mathclass.org/> into the Trusted sites list, depending on how your Internet Explorer security is configured. (In addition, you must not disable JavaScript and must allow in-memory cookies.)
6. If you have problems making this procedure work, temporarily work from any SCS lab or the Mathskeller.



# Exams

Each exam is worth 100 points. You must bring a photo ID to each exam and you may use a calculator on the exams. Absolutely no cell phone use during an exam is allowed. The final exam, Exam 4, will be comprehensive.

## Exam rooms

Click [here](#) for the room schedule for exams 1-3 and the final exam.

## Exam dates and material

Exam 1: 5:00-7:00 pm, September 23, 2009.

Covers homework sets 00-05 and Chapters 1, 2 and 3.

Exam 2: 5:00-7:00 pm, October 21, 2009.

Covers homework sets 06-13 and Chapters 4, 5, Supplement, and 6 (without concavity).

Exam 3: 5:00-7:00 pm, November 18, 2009.

Covers homework sets 14-20 and Chapters 6 (concavity), 7, 8 and 9.

Exam 4: 6:00-8:00 pm, December 14, 2009.

Comprehensive (covers all homework sets and chapters).

After an exam is given, you should go back over the exam and redo problems you got wrong since this will help you prepare for the final.

## Alternate exams

Students who have university excused absences or who have university-scheduled class conflicts with uniform examinations may take the Alternate Exam. You must fill out the Alternate Exam Request Form and submit it to your instructor at least two weeks before the scheduled exam. Click [here](#) to download the Alternate Exam Form.

The Alternate Exams for Exams 1-3 are given on the same days as the regular exams (September 23, October 21, November 18) from 7:30 pm - 9:30 pm.

## Old exams

Exams from previous semesters are posted [here](#).



# Tutoring Resources

If you find that you are having difficulty with any aspect of the course, you should seek help immediately.

If you are having trouble with a homework problem, you can send e-mail through the online homework system to an instructor. Try to provide as much information as possible in your help request. For example, you should at least describe how you attempted the problem and at least guess where you might be going wrong. **DO NOT EXPECT** to receive e-mail help if you wait until the evening of the due date of the homework assignment.

The Mathematics department will have instructors available in The Mathskeller, Whitehall Classroom Building (CB) 63 during the day to answer students' questions between classes M-F from 9am-5pm.

To complement The Mathskeller resource, The Study, now located on the spacious 3rd Floor Commons on South Campus, will continue to offer free, drop-in Peer Tutoring in the evenings. Peer Tutors for math courses will be available every hour Peer Tutoring is offered: Sundays 6-10pm and M-Th 3-10pm.

