

Syllabus for MA 113 – Calculus I, Fall 2009

Web site:

The home page for this course is at

<http://www.ms.uky.edu/~heidegl/Ma113/Ma113.html>

It is designed to help you and to provide information. This syllabus, the course calendar, all handouts and solutions to exams and written assignments will be posted on this web site.

Class Schedule:

- Lectures: MWF, time and place according to your section (see also web page)
- Recitations: Time and place according to your section (see also web page)
- Exams: There are three uniform midterm exams and one final exam. The final exam will be cumulative though with an emphasis on the material covered since the third exam. Exam rooms will be announced later.

Exam 1: Tue, Sept. 22, 7:30 – 9:30 pm

Exam 2: Tue, Oct. 20, 7:30 – 9:30 pm

Exam 3: Tue, Nov. 17, 7:30 – 9:30 pm

Final exam: Tue, Dec. 15, 8:30 - 10:30 pm

MA 193:

In addition to the 4 hours of credit for MA 113, the department offers one additional hour of credit for MA 193 on a pass/fail basis. You will pass MA 193 if you have at most 2 unexcused absences during MA 113 recitations and pass MA 113. If you fail MA 113 or have 3 or more unexcused absences you will fail MA 193.

Your section number for MA 193 has to equal your section number for MA 113. If you drop or change sections of MA 113, please make sure to also drop or change sections of MA 193. **It is your responsibility to take care of this if you change sections; otherwise you risk a failing grade for MA 193 because you are not on the proper class roll.**

Textbook:

Calculus (Early Transcendentals), 6th edition, by James Stewart, ISBN 978-0-495-01166-8 or 0-495-01166-5

Goals:

In Calculus I, we will learn about derivatives, integrals and the fundamental theorems of calculus. We begin by introducing the notion of a limit. Limits are essential to defining derivatives and integrals. By the end of the semester students should know precise definitions of continuity, the derivative, and the integral and understand the fundamental theorem of calculus which relates the latter two. We will illustrate the methods and ideas of calculus by applying them to solve several physical and geometric problems.

We will cover most of Chapters 1 to 5 of Stewart's book. Please see the course calendar for a detailed listing of sections.

Exposure to the precision needed in Calculus will foster critical thinking and rational reasoning. In order to help you learn to formulate and communicate mathematical ideas, there will be six written assignments. Your solutions to these assignments are expected to be carefully drafted documents that are written up in complete sentences. You should lay out and explain all the arguments you used to arrive at your solution.

Grading

You can earn up to 500 points in the course based on the following activities:

3 exams	300 (100 points each)
Final exam	100
Homework and attendance	100
Total	500

The 100 points for homework and attendance are computed based on the following components:

Web homework	95 points
Written assignments	60 points (10 points each)
Attendance of the lectures	45 points
Total divided by 2	100 points

Your course grade will be based on the number of points you earn according to the following scheme:

Total earned course points (out of 500)	450-500	400-449	350-399	300-349	0-299
Final course grade	A	B	C	D	E

Homework and Quizzes:

There are three types of homework, details are described below; only the first two count towards the grade:

1. web-based homework,
2. 6 written assignments,
3. optional homework.

1. Web-based Homework:

The bulk of the homework will be completed using the well tested **web-based homework** system that grades your solutions and records your scores. You find it at www.mathclass.org (see below for administrative details on using this website). Each homework set comes as a common version and a personal version. When entering answers to the common version into the system, it will tell you whether or not your answer was correct and, if necessary, provides you with the correct solution. When entering answers to the personal version you will see whether or not it is correct, but nothing else. This way, the common version serves as a study guide for the personal version. **Only correct solutions to your personal version of the homework assignment give you credit!** Notice that for each web-based homework problem you may resubmit your answer as often as you wish before midnight of the due date! Only your final (and hopefully correct answer) will be recorded for your homework grade. You may find your score at

www.mathclass.org by clicking homework scores on the main page.

We recommend to approach the web-based homework assignments via the following rules.

- a) Start to work on an assignment as soon as the corresponding material is discussed in class.
- b) Print out copies of your personal and of the common version (it is free in the Mathskeller, the student staff will show you how to do so) and put them in a notebook.
- c) Get together with classmates to work on the problems via the printouts. The best thing is to work together on the common version. Write down the solutions in your notebook and only thereafter enter your solutions on the webpage. Check your answers by entering them into the system, and, if necessary, rework the problem and try to understand the correct answer provided to you by the system.
- d) Thereafter work on the problems of your personal version and remember: only correct solutions to your personal version will earn you credit.
- e) Bring the notebook with you when you go to office hours.
- f) You are encouraged to discuss homework problems and the course material with each other. However, when it comes time for you to write up or enter the solutions, we expect you to do this completely on your own. It would be the best for your understanding if you put aside your notes from the discussions with your classmates and wrote up the solutions entirely from scratch.
- g) If necessary, you may take the common version of the homework set with you to recitation and seek help.
- h) If you feel you have worked a problem correctly and WHS marks it incorrect, please contact your teaching assistant or lecturer, for example, by e-mail.

2. Written Assignments:

These assignments are intended to help you learn to communicate mathematics and to present clear, well-written solutions to problems. Your solutions will be graded by humans for mathematical correctness and for clarity of exposition. Students who wish to receive full credit should write in complete, grammatically correct sentences. You should give clear reasoning and present the steps of your solution in logical order.

3. Optional homework:

There are various optional homework problems that do not count towards your grade: the web-based assignments A0, AR, BR, CR, DR as well as optional homework assignments from the textbook, listed in the course calendar.

The optional assignment A0 is intended to introduce you to the syntax to enter mathematical expressions in the web homework system. The review assignments AR, BR, CR, and DR are study guides for each exam. All students are strongly advised to complete these review assignments and do optional homework from the textbook.

Quizzes will be given regularly during recitations (see the course calendar). The quizzes will not be graded. They should help you to cope with a test situation where you have to work the given problems with closed books and a limited amount of time.

Late Homework:

No late submissions of web homework will be accepted. If an emergency or illness takes you away from school, please meet with your lecturer to discuss your situation and ask to be excused from an assignment, if appropriate. If you have a scheduled absence (travel or authorized university absence) you must still submit the web homework by the deadline.

Written assignments are due at the beginning of the lecture. If an emergency or unexpected absence prevents you from turning in the assignment, please see your lecturer to request permission to turn in the assignment late. If you have a scheduled absence (travel or authorized university absence) you should arrange to turn in the paper before leaving school. Unexcused and late submissions will be penalized 10% if the paper is turned in late on the due date and an additional 20% for each day that it is late.

Attendance:

You are expected and strongly advised to attend all lectures and recitations.

Lecturers will take attendance beginning September 2. Your attendance score is based on the percentage of lectures you attend. You will receive full credit (45 points, see above) if you have at most 2 unexcused absences. Attendance in recitation is required for a passing grade for MA 193 (see above), and is strongly recommended for everybody. Recitations are the place where you have a chance to actively engage, work problems under guidance, seek assistance, and communicate with your peers and the instructor.

Calculators and Laptop Computers:

Students may use a graphing calculator on exams and homework. The use of machines with symbolic manipulation capabilities is not allowed during examinations. Thus, no TI-89's, TI-92's, no HP-48's or laptop computers may be used on exams. Please talk to your lecturer if you have any questions as to whether a particular machine may be used on a test. We may clear the memory of calculators before or during an examination.

The use of laptop computers is not allowed during lectures.

Using the web homework system on mathclass.org:

In order to access www.mathclass.org do the following steps (Students who registered near the beginning of the semester should wait 24 hours after they registered for MA 113):

- Use a web browser Internet Explorer 8.0 (or later version) or Firefox 3.1 (or later version). If you use Internet Explorer you will need to have additional plug-ins installed for correct display of the mathematical formulas. On Mac use Firefox 3.1 (or later version), Safari will not work.
- Go to <http://www.mathclass.org> and click on **Login to WHS**. (Do not(!!!) follow the "Register in WHS" link!)
- Log in using your campus active directory account login and password. This is the account you use to access your myUK. Enter your login name as ad\UserName where UserName is your active directory login name and use your current active directory account password. The password is case-sensitive!
- Follow all the instructions until you see the class MA 113 showing up. Print out the homework set A0 as well as the common and your personal version of A1.
- After the first time, you will be able to simply login with your ad\UserName and your active directory account password and you will be connected to your account.

If you have difficulty logging in, you may find further instructions on <https://www.mathclass.org/mc/Postings.aspx?postId=658>. You may also visit the Mathskeller (CB 063) M-F from 9 am to 5 pm. There will be extra staff to help with www.mathclass.org accounts on August 27, 28, and 31 from 1 pm to 4 pm.

Students who choose to drop MA 113 must drop through the registrar's office. Dropping your registration at www.mathclass.org will have no effect on your official registration.

Students who switch sections of MA 113 during the add-drop period will have their registration at www.mathclass.org updated automatically. When a student changes sections of MA 113 with the registrar's office, the account and record of homework will be automatically transferred to the new section at www.mathclass.org.

Study Advice and Getting Help:

It is essentially impossible to passively teach mathematics; it must be actively learned. To understand what this means, consider the impossibility of learning to play tennis by listening to someone describe how to play tennis or by watching some world-class player. You will not learn the material in this course by just listening to the lectures, and thinking to yourself – "Yes, I understand that". You must work the problems and go through the difficulties yourself 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.

This being said, form good study skills from the start! Come to class. Read the text prior to the lecture where it will be covered. Take notes and **do the homework**. Find classmates to study with. Do not fall behind. It is very difficult to catch up in a math class after falling behind. **Use old exams of MA 113 to take a practice test by yourself in an exam-like situation. Compare your solutions with those provided by the answer key.** If you are having trouble, then seek help without delay.

If you are having trouble with a homework problem, you can send an e-mail through the online homework system to your teaching assistant. Try to provide as much information as possible in your help request.

If you need more help than what can be provided by the online help, you should take one or more of the following steps.

- Talk to your instructors before or after class or send them an email, if necessary. Let them know what problems you are having, if any. They will be happy to help!
- Go to the office hours of your instructors.
- You can also seek help in the **Mathskeller** that is located in room CB 063 in the basement of the classroom building. Many instructors and teaching assistants from the Department of Mathematics will hold office hours in the Mathskeller. In addition, limited drop-in tutoring is available. You can seek help from any of the instructors or teaching assistants — not just your own. The Mathskeller is open from 9 am to 5 pm Monday through Friday (except academic holidays) during the semester. Additional information is available at www.mathskeller.org.
- Furthermore, you can seek help in **The Study** located on the 3rd floor of the Commons, South Campus. Academic Enhancement provides drop-in peer tutoring by experienced undergraduate students who have successfully navigated the courses for which they tutor. A regular schedule of all tutoring is available on The Study's website www.uky.edu/ugs/study. You can also call 257-1356.

You can find more detailed suggestions of how to study for the course on the handout "Some Suggestions on How to Study Mathematics", see also www.math.uky.edu/~heidegl/Ma113/Handouts/HowToSucceed.pdf.

Policies:

1. Attend lectures and recitations regularly. Be on time and remain until dismissed. Do not leave in the middle of class. Instructors have the right to take off attendance points for coming late or leaving early.
If you cannot come to lecture or recitation and would like to request an excused absence let the instructor know about it next time in class (see also the section on attendance).
2. Classes are cell phone-free and laptop-free zones! Cell phones and laptops must be off and out of sight for the entire class period (see also the section on calculators and laptop computers). Instructors have the right to take off attendance points for using cell phones or laptops during class. The same applies to reading newspapers or other activities unrelated to the course.
3. In order to be fair to all students, dates for exams and homework assignments are firm. It is very important to take each exam on schedule. Missed work may be made up only due to illness with medical documentation or for other unusual (documented) circumstances (see also the section on late homework for policies on late written assignments). If you have a university excused absence or a university-scheduled class conflict with uniform examinations please contact your lecturer as soon as possible, **at least 10 days before the exam**, so that an alternate exam can be arranged for you.
4. *Academic Honesty*: Students are encouraged to work together to understand a problem and to develop a solution. However, the solution you submit for credit must be your own work. In particular, you should write your solutions to the written assignments independently. Copying on exams and usage of books, notes, or communication devices during examinations is not allowed. Cheating or plagiarism is a serious offense, and it will not be tolerated. Students are responsible for knowing the University policy on cheating.
5. To earn top grade on exam problems and written assignments it is not enough to have the correct answer, but you must also show the correct reasoning.
6. Classes do meet as usual on the days after an exam as well as on Monday and Tuesday of Thanksgiving week. Attendance rules apply as usual.

Calendar for Ma 113: Calculus - Fall 2009

Lecture	In-Class Activities:	Due Dates	Optional Textbook Problems
26-Aug Recitation	1.1 - 1.4: Domain, Range; Linear and Quadratic Functions		
27-Aug	Pretest, Worksheet 1		p.74: 1,3,5,6,10,11,19; p. A15: 1,7,17,18,21,37; p. A23: 11,14,29,33
28-Aug	1.6: Inverse Functions (w/o Log and Inverse Trig)		1.6: 1-13 odd,21,27,29,33,35
31-Aug	1.5, 1.6: Exp. and Log. Functions (w/o e and ln)		1.5: 1-11 odd; 1.6: 33,35,37
1-Sep	Worksheet 2, Assignment 1 handed out	Last day to add a class or drop for 80% refund	
2-Sep	2.1 The Tangent and Velocity Problem	A1 due by midnight	2.1: 1,3,5,7
3-Sep	Worksheet 3, Quiz 1	A2	
4-Sep	2.2 The Limit of a Function		2.2: 1,5,7,9,13,15,25,27,33
7-Sep	Labor Day - Academic Holiday		
8-Sep	Worksheet 4		
9-Sep	2.3 Limit Laws	A3, Assgn1 due in class	2.3: 1-15 odd,21,25,29
10-Sep	Worksheet 5, Quiz 2, Assignment 2 handed out		
11-Sep	2.5 Continuity	A4	2.5: 3-13 odd,16,19,21,23,35,37,41,47
14-Sep	2.7 Derivatives and Rates of Change		2.7: 1-9 odd, 13,17,19,25,27,31
15-Sep	Worksheet 6	A5	
16-Sep	§2.8 The Derivative as a Function	A6, Last day to drop	2.8: 1,3,5,9,19,23,25,35
17-Sep	Worksheet 7, Quiz 3		
18-Sep	Review	A7, Assgn2 due in class	
21-Sep	Review		
22-Sep	Worksheet 8		
22-Sep	Exam 1, 7:30-9:30 PM, room TBA		
23-Sep	3.1 Derivatives of Poly. and Exp. Fct's (introduce e and ln)	Last day to withdraw for 50% refund	3.1: 1,3,5,7,15,17,21,23,31,33,39,47
24-Sep	Worksheet 9, Assignment 3 handed out		
25-Sep	3.2 The Product and Quotient Rules	B1	3.2: 1,3,7,11,15,23,27
28-Sep	Appendix D and 1.6: Trig and Inverse Trig Functions		App D: 1,7,13,19,20,29,31,33,35,43,51,59,65; 1.6: 59,61,63,65
29-Sep	Worksheet 10		
30-Sep	3.3 Derivatives of Trig Functions	B2	3.3: 1,5,9,15,17,21,33,39
1-Oct	Worksheet 11, Quiz 4		
2-Oct	3.4 Chain Rule	B3, Assgn3 due in class	3.4: 1,5,9,19,23,35,47
5-Oct	3.5 Implicit Differentiation and Derivatives of Inverse Trig	B4	3.5: 1,5,11,19,21,27,33
6-Oct	Worksheet 12, Assignment 4 handed out		
7-Oct	3.6 Derivatives of Logarithms (w/o Logarithmic Diffn)	B5	3.6: 3,7,13,19,33,37,43
8-Oct	Worksheet 13, Quiz 5		
9-Oct	3.7 Rates of Change	B6	3.7: 1,5,9,15,21,23
12-Oct	3.8 Exponential Growth and Decay	B7	3.8: 3,5,7,11,13
13-Oct	Worksheet 14		
14-Oct	3.9 Related Rates	B8	3.9: 3,7,13,15,25,31,37,43
15-Oct	Worksheet 15, Quiz 6		
16-Oct	Review	B9, Assgn4 due in class	

19-Oct	Review		
20-Oct	Worksheet 16		
20-Oct	Exam 2, 7:30-9:30 PM, room TBA		
21-Oct	4.1 Maximum and Minimum Values		4.1: 5,9,11,13,17,21,25,29,33,34,41,49,51,57,61
22-Oct	Worksheet 17, Assignment 5 handed out		
23-Oct	4.2 The Mean Value Theorem	C1	4.2: 3,5,7,11,15,19,23,25
26-Oct	4.3 How Derivatives Affect the Shape of a Graph		4.3: 3,5,7,11,17,19,25,31
27-Oct	Worksheet 18		
28-Oct	2.6 Limits at Infinity, Horizontal Asymptotes	C2	2.6: 3,5,7,13,19,25,33,41,49,53(a)
29-Oct	Worksheet 19, Quiz 7		
30-Oct	4.4 L'Hopital's Rule (w/o Differences and Powers)	C3	4.4: 1,3,5,9,17,21,29,43,55
2-Nov	4.5 Summary of Curve Sketching (w/o Slant Asymptotes)		4.5: 5,9,17,19,33,41
3-Nov	Worksheet 20, Assignment 6 handed out		
4-Nov	4.7 Optimization Problems	C4	4.7: 3,5,11,13,17
5-Nov	Worksheet 21, Quiz 8		
6-Nov	4.7 Optimization Problems	C5	4.7: 19,33,55
9-Nov	3.10 Linear Approximation (w/o Differentials)		3.10: 1,3,9,23,29; 4.8: 3,5,11,17,21,31,33
10-Nov	Worksheet 22	C6	
11-Nov	4.9 Anti-Derivatives	C7	4.9: 3,7,15,21,23,31,39
12-Nov	Worksheet 23, Quiz 9		
13-Nov	Review	C8	Assgn6 due in class
16-Nov	Review		
17-Nov	Worksheet 24		
17-Nov	Exam 3, 7:30-9:30 PM, room TBA		
18-Nov	5.1 Areas and Distances		5.1: 3,11,15,17,21
19-Nov	Worksheet 25		
20-Nov	5.2 The Definite Integral	D1	5.2: 1,5,9,19,21,23,33,37,49,53,55
23-Nov	5.3 The Fundamental Theorem of Calculus		5.3: 3,5,9,13,17,19,27,31,39,51,53
24-Nov	Worksheet 26		
25-Nov	Thanksgiving Break - Academic Holiday		
26-Nov	Thanksgiving Break - Academic Holiday		
27-Nov	Thanksgiving Break - Academic Holiday		
30-Nov	5.3 The Fundamental Theorem of Calculus	D2	
1-Dec	Worksheet 27		
2-Dec	5.4 Indefinite Integrals and Net Change	D3	5.4: 3,5,9,15,23,31,37,43
3-Dec	Worksheet 28, Quiz 10		
4-Dec	5.5 Substitution Rule		5.5: 3,7,13,19,21,25,33,43,59,67,7E
7-Dec	Review		
8-Dec	Worksheet 29		
9-Dec	Review	D4	
10-Dec	Worksheet 30		
11-Dec	Review		
15-Dec	Final exam, 8:30-10:30 PM, room TB/		