

## Calculus and Analytic Geometry I, Math 2413

All information is subject to change. Attend all classes, check your email, and web site regularly.

<http://www.math.lamar.edu/faculty/maesumi/list.html>

**Coordinates:** MATH 2413-05, Fall 2010, MWF 12:20-1:10, R 11:00-11:50, Lucas 113. Note: Thursday classes may be extended to 11:00-12:15 to give extra time for tests.

**Contact Information:** Instructor: Dr. Mohsen Maesumi, Ph.D., the main and preferred contact form is by E-mail: [maesumi@gmail.com](mailto:maesumi@gmail.com). If you send email keep a copy and e-mail it again if you do not get a reply within one business day. Write Calculus I, or MATH 2413 in the Subject line and make sure to sign the e-mail by writing your full name (otherwise I may not be able to tell who the email is from). Use of email addresses other than [maesumi@gmail.com](mailto:maesumi@gmail.com) may delay the response. If you are coming to office, Lucas 206, consider bringing exams, notebooks and supporting material. If you want to leave a message on phone 409-880-8766, make it brief, speak clearly, and resend the same by email.

**Office Hours:** MWF 11:15-12:00, 1:30-2:30. I am usually on campus 8:30-2:30. Feel free to drop in. If door is closed knock and wait 30 seconds.

**Text:** Calculus, Early Transcendentals, 5<sup>th</sup> Edition, by James Stewart, available online, ISBN: 0534393217. (The original CD is not needed.) If you want to use a different edition cross check page/problem numbers with a classmate.

**Class Format:** We can have one of three formats:

**Type A:** Lectures will be delivered on-line, as hand-written in digital ink with narration. Class time will be used for problem presentations by students. This approach requires solid study habits and has been shown to substantially increase student grades in calculus II. Students are allowed to bring one spiral-bound notebook containing handwritten lecture and homework to tests.

**Type B:** Lectures are delivered online. Class time is used for presentation of homework problems by the instructor. Students are allowed to bring a half page one side formula sheet to tests.

**Type C:** Lectures are given in class. Some homework problems are done in remaining time. No formula sheet is allowed on tests.

We will decide as to which format will be used after a vote. My favorite approach is Type A, but that requires substantial participation. In case of lackluster participation we may switch to plan B or C. The main advantage of using a Type A course format is in maximizing the interaction between faculty and student. In addition:

You can replay the video to understand the lecture better.

You can review the video with a classmate or instructor.

You can pause the video, work a problem yourself, and compare with the presented solution.

You can view the video at your own place, time, and speed.

You get access to animation, graphing and useful links.

You get the most complete lecture notes. Now you cannot be absent.

Most importantly, by putting the lectures on-line, instructor's time in class will be freed for interaction with students. Errors can be corrected in real time, insights can be recognized, and hands-on instruction can become a reality. Class becomes a public tutoring place. If you have the stamina for it, that is the best approach. The instructor is not there to judge at the board but he is there to push you to do your best. More like a coach than a teacher.

**Exams: (full schedule at [http://www.lamar.edu/pdfs/Final\\_Exam\\_Schedule.pdf](http://www.lamar.edu/pdfs/Final_Exam_Schedule.pdf))**

There will be three sectional tests and a cumulative final. Each counts as 25% of the final grade. Tests are to be returned after you view them.

Tests are on Thursdays September 23, October 28, December 2. Tests are designed for 50 minutes but if you want extra time you may stay for the full length of period from 11:00-12:15 to get extra 25 minutes. Cumulative Final is on Friday December 10 from 11:00 to 1:30 in class.

**Grading:** In-class presentations and lecture notebooks can add up to 5 points to each test. Completing the online course evaluation adds 5 points to one of your lowest test grades. Letter grade is given at least by  $A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F$ .

**Style:** Handwriting, presentation, speed, and accuracy count toward your grade for tests, lecture notes, and class presentations. It is very important that you write properly and neatly, and master efficient ways of explaining technical information. More extensive requirements will be detailed on the web site of the course and on other handouts.

**Class Participation:** Your class participation grade depends on the following factors

- a) Student views the videos and studies the text.
- b) Student can be engaged in a discussion related to the home work problems.
- c) Student presents solutions to exercises on board.
- d) Presented solution is correct.
- e) Presented solution is well-explained.
- f) Presented solution is done from scratch (not copied from homework notebook).
- g) Presented solution uses correct mathematical grammar and notation.
- h) Student can expand on the problem and its solution.
- i) Student gives his/her exercise note book to instructor before starting presentation.
- j) Student is in attendance.

Copying solutions from solution manual or other sources is not acceptable.

**Prerequisites:** College algebra, trigonometry and geometry at least at the level of 1314 and 1316. Solid understanding of Chapter 1. Preferably a high school/AP course in calculus or MATH 2376. Students who jump from a non-challenging high school algebra or pre-calculus to 2413 do not perform well. Budget by allocating 12 hours per week during long semesters and 18 hours per week during compressed summer semesters. See detailed recommendations on the web site.

**Tutoring:** Free tutoring is available. Check:

Lucas 209 (upstairs, computer lab). This program starts two weeks after the start of classes.

STARS program (<http://dept.lamar.edu/stars>) The tutoring center is located in the John Gray Library on the first floor. You can contact the tutoring center by calling 409-880-7526 or by sending email to [Starstutoring@lamar.edu](mailto:Starstutoring@lamar.edu).

**Absence and Exam Make Up Policy:** If you are absent from an exam let me know as soon as possible and be prepared to show written proof of emergency. An individual decision will be made in each case.

**Important dates: (full calendar at <http://www.lamar.edu/newsevents/acadcal.php>)**

Drop day 1, automatic Q, September 27. Contact instructor by September 20.

Drop day 2, Academic Penalty, November 1. Contact instructor by October 25. Deadline is strict!

Note: There is "a maximum of 6 dropped courses" rule.

**Audience:** This course is for students in math, engineering, physics, computer science, biology+psychology, biology+chemistry, chemistry, biochemistry, forensic chemistry. Some students from other disciplines may be required to take this course as well. All students are graded on the same basis even if they decide to change their major.

**Grade Change Requests:** In case of error in your grade let me know within one week of a test or the end of semester.

**Course Objectives:** Successful completion of this course means the students will

- (a) Understand limits and calculate the limit of basic functions, using algebraic, graphical, and numeric methods.
- (b) Understand the concept of tangent lines, and be able to find the slope of a tangent line to polynomial and rational type functions from definition.
- (c) Understand the concept of velocity, acceleration and rates of change of physical quantities and be able to describe events in a rectilinear motion.
- (d) Understand limits at infinity, infinite limits and various types of asymptotes.
- (e) Understand rules and techniques of differentiation (linearity, product, quotient, power, chain, implicit, higher order).
- (f) Understand the differentiation formulas for trigonometric, inverse trigonometric, exponential, logarithmic, and hyperbolic functions.
- (g) Show competency in three critical topics of graphing, related rates, and optimization.
- (h) Understand the connection between area calculation and definite integrals.
- (i) Understand the connection between differentiation and integration, and the fundamental theorem of calculus.
- (j) Show competency in applying simple integration techniques to calculation of areas and volumes of simple regions.

**Hardware and Software Requirements:** You are advised to make sure you have all the necessary parts in place early on. You will need access to an on-line Windows computer with Windows Media Player (or a compatible software) and speakers or a headset. To view optional demos several free software will be needed as listed on the web site. There are many computer labs on campus for your use: Math Computer Lab Lucas 209, Gray library Media Room on 7th floor, and Computer Science Labs on 2nd floor of Maes Building. In Gray Library you can check out a headset, but in other places you need to bring your own. Most likely you already have a headset, if not, you can purchase an inexpensive one for school use. Those with MAC computers need to download additional software to view the videos. See the web site, under Compatibility, for more information.

### **How to Prepare for Tests:**

- 1- View videos regularly and take lecture notes even from the video.
- 2- Rewrite the lecture in your own words.
- 3- Pause the video and try the problem yourself.
- 4- Self-Test: Identify problems for which there is a complete solution in video, text, or class lecture notes. Write the full statement of the problem on an index card, indicate where the solution is to be found, and note the allotted time for its solution. Put the cards in a box. To review before the test pull ten questions randomly from the box and give yourself a timed test. Compare your solution with the correct solution. Identify your incorrect answers and review the relevant sections. Try to test a second time.

**Calculator Policy:** You are allowed to use a basic scientific calculator on all tests. Basic calculators cost about \$10, are not capable of drawing graphs, solving equations, differentiating, or integrating. Use of an advanced or graphing calculator will reduce your grade by 50 points. You need to purchase your calculator early and get used to its functions. Do keep the manual or find its web site. Some calculators have the so-called natural language display (e.g. they can show  $\frac{\sqrt{2}}{3}$  just as in text). Casio FX-115ES and Sharp EL-W516 are two calculators below \$20 with this ability.

**Online Course Evaluation:** You get 5 points added to one of your lowest test scores by completing the evaluation at

<https://www.onlinecourseevaluations.com/login.aspx?s=lamar&r=true>

When you complete the evaluation print a copy of the last page (not the actual evaluation but the page that says you completed the task), write your full name on it, and give it to me on the day of final.

**Academic Integrity:** University rules apply. Have ID with you at all times. Caps, hair, hand, sunglasses, paper, slouching, etc, should not cover your face during tests. Look at your own papers at all times, do not display your papers to others. Copying from any source is not acceptable.

**Solution Manual Policy:** Do not bring it to class. Solutions copied from solution manual are not acceptable. You should be able to reproduce your solutions from scratch.

**No:** Noise, food, drinks, ice, gum, candy, chips, texting, ipod, surfing, or other edrugs, etc.